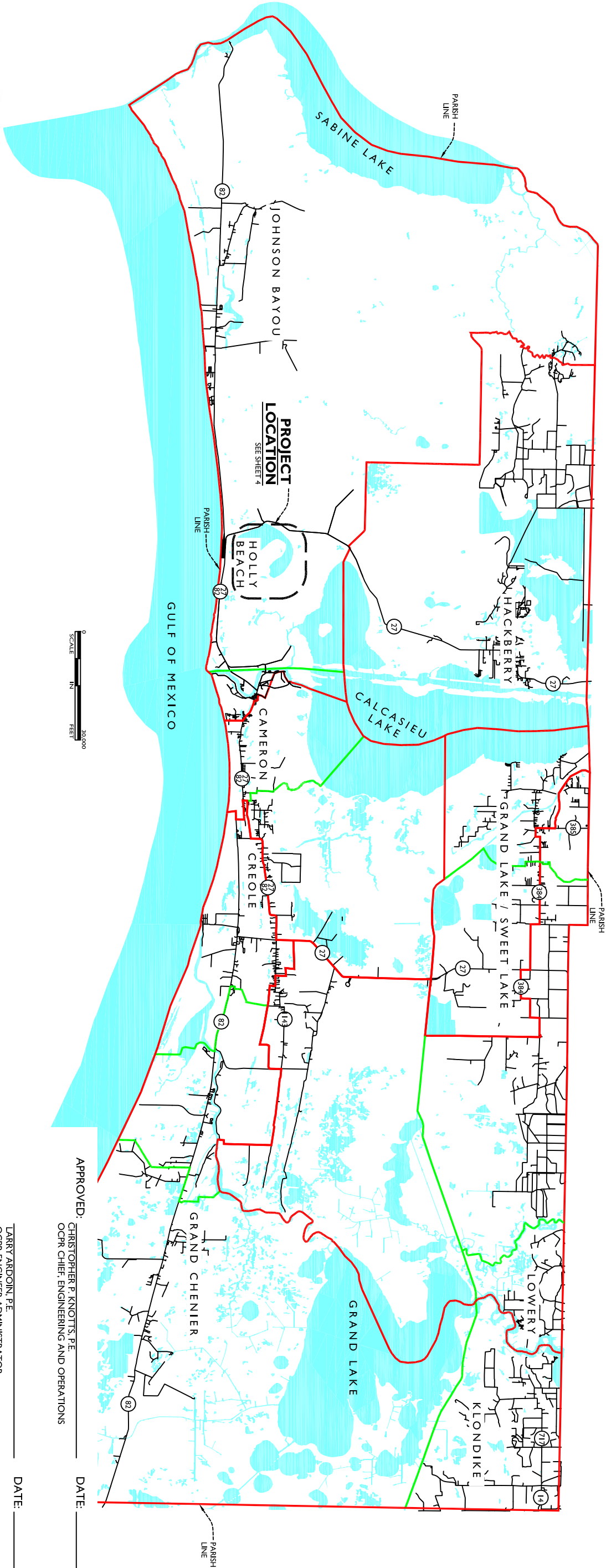


STATE OF LOUISIANA  
OFFICE OF COASTAL PROTECTION AND RESTORATION  
MUD LAKE MAINTENANCE PROJECT  
PROJECT NO. CS-20  
CAMERON PARISH



APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_  
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OCPR CHIEF, ENGINEERING AND OPERATIONS

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LARRY ARDOIN, P.E.  
OCPR ENGINEER ADMINISTRATOR

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OCPR ENGINEER MANAGER

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PATRICK J. LANDRY, P.E.  
OCPR PROJECT MANAGER

\_\_\_\_\_  
LONNIE G. HARPER, P.E.  
LONNIE HARPER & ASSOC. INC



AS-BUILT DRAWINGS

STATE  
PROJECT  
SPONSOR

FEDERAL  
PROJECT  
SPONSOR



TYPE OF CONSTRUCTION

CLASSIFICATION III (HEAVY CONSTRUCTION)  
MUD LAKE MAINTENANCE PROJECT  
CANAL DREDGING, LEVEE RESTORATION  
AND WATER CONTROL STRUCTURE RESTORATION

2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS
REV.	DATE	DESCRIPTION
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DRAWN BY: AARON HARPER

DESIGNED BY: LONNIE HARPER

MUD LAKE  
MAINTENANCE PROJECT

STATE PROJECT NUMBER: CS-20

FEDERAL PROJECT NUMBER:

VICINITY MAP

DATE: 02/09/2009

SHEET 01 OF 47

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STEP CANAL "SC-I" CLEANOUT BASE BID			
ITEM NO.	DESCRIPTION	QUANTITY	PAGE NO.
2-1	DREDGE CANAL AND PLACE MATERIAL ON ADJACENT LEVEE FOR 16,762 LINEAR FEET	16,762	4-5
<p align="center"><b>STRUCTURE NO "ES-I"</b> <b>BASE BID</b></p>			
ITEM NO.	DESCRIPTION	QUANTITY	PAGE NO.
3	REPLACE TWO (2) PILE CAPS	LUMP SUM	44
3	REMOVE DEBRIS FROM WITHIN AND FROM BOTH ENDS OF ALL CAPS	LUMP SUM	6
3	REPLACE THREE (3) LIKE KEYS PADLOCKS ON THE STRUCTURE	LUMP SUM	6
4	INSTALL 300 TONS OF 30# CLASS ROCK ALONG THE ERODED BANK LINES OF THE UPRSTREAM END OF STRUCTURE ADJACENT TO THE EXISTING LEVEE	TON	6
3	EXTEND TIMBER BOARDWALK 8'-0" FROM STRUCTURE TO BANK	LUMP SUM	7
3	REPLACE GRATING ON THE INLET SIDE OF THE STRUCTURE	LUMP SUM	7

STRUCTURE NO "ES-3" BASE BID			
ITEM NO.	DESCRIPTION	QUANTITY	PAGE NO.
5	REMOVE DEBRIS FROM WITH-IN, AND FROM BOTH ENDS OF ALL C.A.P.	LUMP SUM	8
5	REPLACE THREE (3) LIKE KEYED PADLOCKS ON THE STRUCTURE	LUMP SUM	8
6	INSTALL 379 TONS OF 30# CLASS ROCK ALONG THE ERODED BANK LINES OF THE UPSTREAM END OF STRUCTURE ADJACENT TO THE EXISTING LEVEE	TON	8
5	EXTEND TIMBER BOARDWALK 10'-0" FROM STRUCTURE TO BANK	LUMP SUM	9
5	EXTEND TIMBER BOARDWALK 8'-2" FROM STRUCTURE TO BANK	LUMP SUM	10
5	REPAIR THE CENTER LOCK CHANNEL ON THE STOP LOG BAY (PARTD-4)	LUMP SUM	45

STRUCTURE NO "ES-5" BASE BID			
ITEM NO.	DESCRIPTION	QUANTITY	PAGE NO.
7	REPLACE TWO (2) PILE CAPS	LUMP SUM	44
7	REMOVE DEBRIS FROM WITHIN AND FROM BOTH ENDS OF ALL C.A.P.	LUMP SUM	11
7	REPLACE THREE (3) PILELOCKS ON STRUCTURE KENING SHALL BE AS DIRECTED BY OWNER	LUMP SUM	11
8	INSTALL 300 TONS OF 30# CLASS ROCK ALONG THE ERODED BANK LINES OF THE UPSTREAM END OF STRUCTURE ADJACENT TO THE EXISTING LEVEE	TON	11
7	EXTEND TIMBER BOARDWALK 10'-1" FROM STRUCTURE TO BANK	LUMP SUM	12

SUMMARY OF ADD ALTERNATE ITEMS			
ITEM NO.	DESCRIPTION	QUANTITY	UNIT
17	REPAIR STRUCTURE NO. 6	1	LUMP SUM
18	ROCK STRUCTURE 6 30H CLASS ROCK	111.04	TON
19	REPAIR STRUCTURE NO. 7	1	LUMP SUM
20	ROCK STRUCTURE 7 30H CLASS ROCK	108	TON
21	REPAIR STRUCTURE NO. 8	1	LUMP SUM
22	ROCK STRUCTURE 8 30H CLASS ROCK	66	TON
23	REPAIR OF STRUCTURE NO 9A	1	LUMP SUM
24	REPAIR OF STRUCTURE NO. 13	1	LUMP SUM

STRUCTURE NO "ES-1" BASE BID			
ITEM NO.	DESCRIPTION	QUANTITY	PAGE NO.
9	REPLACE TWO (2) PILE CAPS	LUMP SUM	44
9	REMOVE DEBRIS FROM WITHIN AND FROM BOTH ENDS OF ALL C.A.P.	LUMP SUM	13
9	REPLACE THREE (3) PILEDOCS ON STRUCTURE KEYING SHALL BE AS DIRECTED BY OWNER	LUMP SUM	13
10	INSTALL 227.31 TONS OF 30# CLASS ROCK ALONG THE ERODED BANK LINES OF THE UPSTREAM END OF STRUCTURE ADJACENT TO THE EXISTING LEVEE	TON	13
9	EXTEND TIMBER BOARDWALK 10'-0" FROM STRUCTURE TO BANK	LUMP SUM	14

STRUCTURE NO "ES-4" BASE BID			
ITEM NO.	DESCRIPTION	QUANTITY	PAGE NO.
11	ABANDON EXISTING STRUCTURE BY DRIVING FIFTY (50) LINEAR FEET OF 20 FT. LONG STEEL SHEET PILE TO BLOCK EXISTING CULVERTS	LUMP SUM	17
11	CONSTRUCT NEW WATER CONTROL STRUCTURE	LUMP SUM	15-36
11	CONSTRUCT NEW MARINE VESSEL BARRIER	LUMP SUM	46-47
11	CLEAN OUT INLET AND OUTLET CHANNELS	LUMP SUM	15-18
12	INSTALL 1,834,122 TONS OF 30# CLASS ROCK	TON	15-18

STRUCTURE NO "ES-9B"			
BASE BID			
ITEM NO.	DESCRIPTION	QUANTITY	PAGE NO.
16	REPLACE FOUR (4) PILE CARS	LUMP SUM	44
16	REMOVE DEBRIS FROM WITH-IN, AND FROM BOTH ENDS OF ALL C.A.P.	LUMP SUM	41
16	REPLACE ONE (1) PADLOCKS ON STRUCTURE KEYING SHALL BE AS DIRECTED BY OWNER	LUMP SUM	41
16	REPLACE ONE (1) HANDLE ON THE FLAP GATE	LUMP SUM	41
16	REPLACE ONE (1) GEAR BOX ON THE SLUDGE GATE	LUMP SUM	41
16	REPLACE ONE (1) STEM COVER	LUMP SUM	41
16	REPLACE GASKET ON FLAP GATE	LUMP SUM	41

STRUCTURE NO "ES-6" ADD ALTERNATE "A"			
ITEM NO.	DESCRIPTION	QUANTITY	PAGE NO.
17	REPLACE FOUR (4) PILE CAPS	LUMP SUM	44
17	REMOVE DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL CAP.	LUMP SUM	37
17	REPLACE FOUR (4) PADLOCKS ON STRUCTURE KEYING SHALL BE AS DIRECTED BY OWNER	LUMP SUM	37
18	INSTALL 111.4 TONS OF 30" CLASS ROCK ALONG THE ERODED BANK LINES OF THE UPRSTREAM END OF STRUCTURE ADJACENT TO THE EXISTING ROADWAY	TON	37

STRUCTURE NO "ES-7" ADD ALTERNATE "A"			
ITEM NO.	DESCRIPTION	QUANTITY	PAGE NO.
19	REPLACE FOUR (4) PILE CAPS	LUMP SUM	44
19	REMOVE DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL C.A.P.	LUMP SUM	38
19	REPLACE FOUR (4) PADLOCKS ON STRUCTURE KEYING SHALL BE AS DIRECTED BY OWNER	LUMP SUM	38
20	INSTALL 108 TONS OF 30# CLASS ROCK ALONG THE ERODED BANK LINES OF THE UPSTREAM END OF STRUCTURE ADJACENT TO THE EXISTING ROADWAY	TON	38

STRUCTURE NO "ES-8" ADD ALTERNATE "A"			
ITEM NO.	DESCRIPTION	QUANTITY	PAGE NO.
21	REPLACE FOUR (4) PILE CAPS	LUMP SUM	44
21	REMOVE DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL C.A.P.	LUMP SUM	39
21	REPLACE FOUR (4) PADLOCKS ON STRUCTURE KEYING SHALL BE AS DIRECTED BY OWNER	LUMP SUM	39
22	INSTALL 66 TONS OF 3RD CLASS ROCK ALONG THE ERODED BANK LINES OF THE UPSTREAM END OF STRUCTURE ADJACENT TO THE EXISTING ROADWAY	TON	39

STRUCTURE NO "ES-9A" ADD ALTERNATE "A"			
ITEM NO.	DESCRIPTION	QUANTITY	PAGE NO.
23	REPLACE TWO (2) RILE CAPS	LUMP SUM	44
23	REMOVE DEBRIS FROM WITHIN AND FROM BOTH ENDS OF ALL C.A.P.	LUMP SUM	40
23	REPLACE THREE (3) PADLOCKS ON STRUCTURE KEYING SHALL BE AS DIRECTED BY OWNER	LUMP SUM	40
23	REPLACE ONE (1) HANDLE ON THE FLAD GATE	LUMP SUM	40

STRUCTURE NO "ES-13" ADD ALTERNATE "A"			
ITEM NO.	DESCRIPTION	QUANTITY	PAGE NO.
24	REPLACE NINE (9) TILE CAPS	LUMP SUM	44
24	REMOVE DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL C.A.P.	LUMP SUM	42
24	REPLACE FOUR (4) PADLOCKS ON STRUCTURE KEYING SHALL BE AS DIRECTED BY OWNER	LUMP SUM	42
24	REPLACE TWO (2) WARNING SIGNS	LUMP SUM	44
24	REPLACE A TOTAL OF ONE HUNDRED SEVENTY FIVE (175) LINEAR FEET OF STEEL SHEET TILE CAP ON THE STRUCTURE	LUMP SUM	43

[illegible]









# AS-BUILT DRAWINGS


## SEQUENCE OF CONSTRUCTION EVENTS

- 1 - STEP CANAL EXCAVATION
- 2 - CONSTRUCTION OF ES-4 STRUCTURE
- 3 - REPAIR OF STRUCTURES

### GENERAL:

THE BIDDER IS REQUIRED TO EXAMINE THE SITE OF THE EXISTING WORK, PROPOSAL, PLANS, SPECIFICATIONS, CONTRACT, AND BOND FORM FOR THE WORK CONTEMPLATED. IT WILL BE ASSUMED THAT HE HAS INVESTIGATED AND UNDERSTANDS THE CONDITIONS TO BE ENCOUNTERED AND THE QUALITY AND QUANTITIES OF WORK AND MATERIALS TO BE PERFORMED AS REQUIRED BY THE PLANS AND SPECIFICATIONS INCLUDED HEREIN.



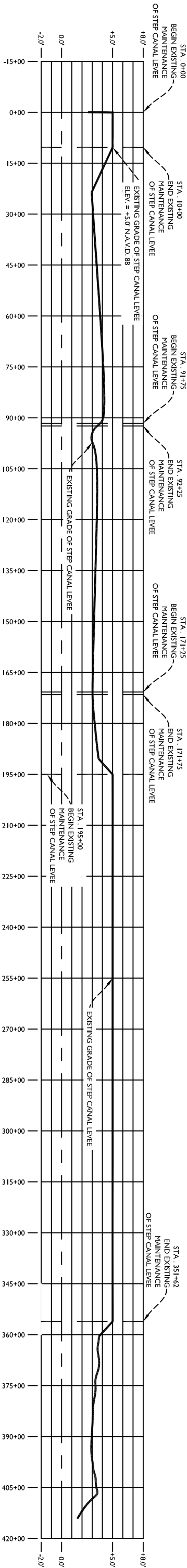
				<div><div>LONNIE G. HARPER and Associates, Inc. CIVIL ENGINEERING AND LAND SURVEYING 2746 Hwy 384, Bell City, Louisiana 70630 PHONE: (337) 905-1079 FAX: (337) 905-1076</div></div>	
		STATE OF LOUISIANA OFFICE OF COASTAL PROTECTION AND RESTORATION 450 LAUREL ST., SUITE 1501 BATON ROUGE, LOUISIANA 70801		MUD LAKE MAINTENANCE PROJECT	
		DRAWN BY: AARON HARPER		DESIGNED BY: LONNIE HARPER	
		STATE PROJECT NUMBER: CS-20		PROJECT LOCATION	
		FEDERAL PROJECT NUMBER:		DATE: 02/09/2009	
		APPROVED BY: LONNIE HARPER		SHEET 04 OF 47	

**NOTE:**  
I. SEE SHEET 5 FOR STEP CANAL DETAILS.

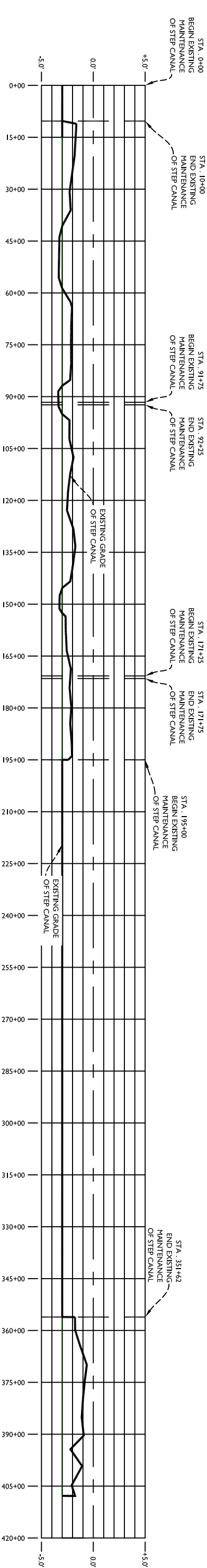
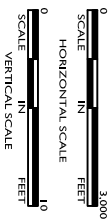




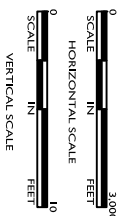
BASE BID



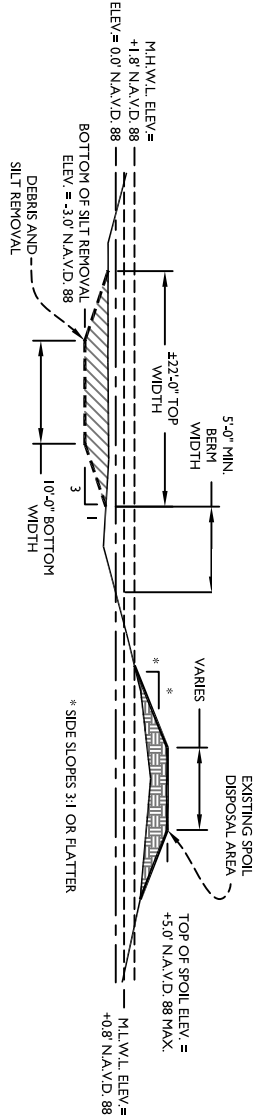
CENTERLINE PROFILE OF LEVEE



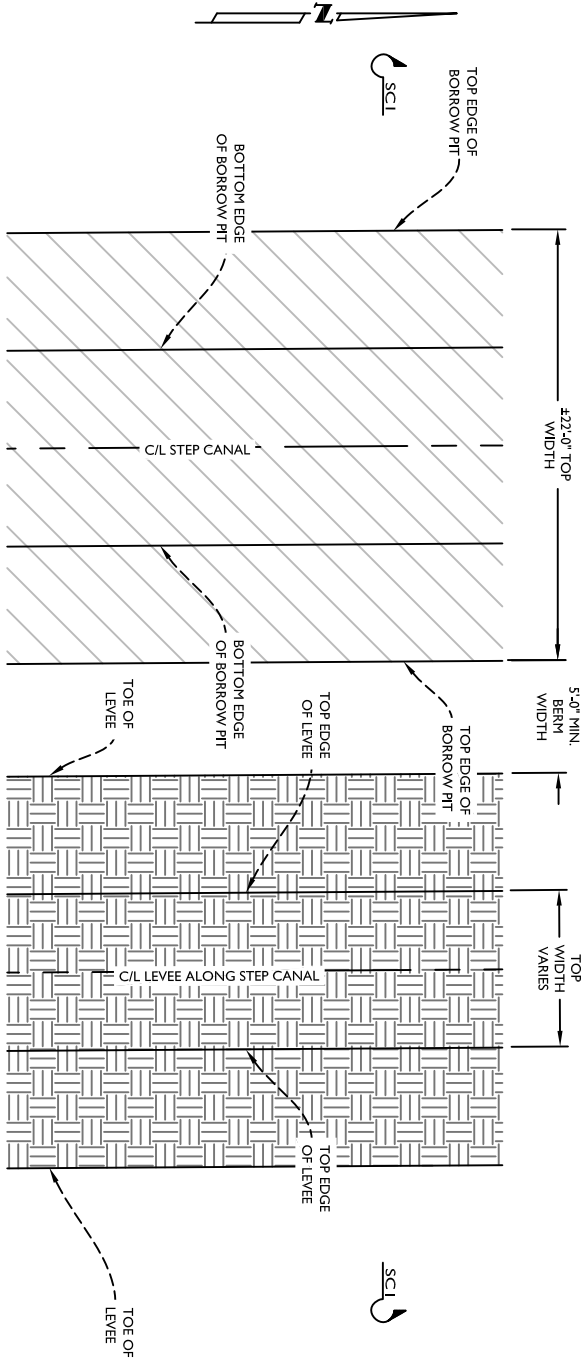
CENTERLINE PROFILE OF CANAL



**NOTE:**  
ADDITIONAL MAINTENANCE MAY BE REQUIRED IN THE STEP CANAL ADJACENT TO STATIONS 91+75, 92+25, 171+75, AND 171+75 DUE TO LIMITED DATA IN THIS AREA. THE ENGINEER SHALL DETERMINE THIS AS SPOIL IS PLACED ON THE ADJACENT LEVEE. THIS WORK SHALL BE LIMITED TO ADDITIONAL SILT REMOVAL.



TYPICAL SECTION "SCI-SCI"



DETAIL "SCI-1"

AS-BUILT DRAWINGS

- T1. REMOVE AND PROPERLY DISPOSE OF ALL DEBRIS IN THE EXISTING BORROW CANAL.
- T2. REMOVE AND PROPERLY DISPOSE OF ALL DEBRIS ON THE EXISTING LEVEE.
- T3. CLEAN APPROXIMATELY 13,330 CUBIC YARDS OF SILT FROM 16,762 LINEAR FEET OF THE EXISTING BORROW CANAL PLACING THE SILT ONTO THE EXISTING LEVEE. QUANTITIES ARE BASED ON LIMITED FIELD DATA COLLECTED ON AUGUST 13, 2007.

REV.	DATE	DESCRIPTION	BY
2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	[gj]



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DRAWN BY: AARON HARPER

DESIGNED BY: LONNIE HARPER

MUD LAKE  
MAINTENANCE PROJECT  
STATE PROJECT NUMBER: CS-20  
FEDERAL PROJECT NUMBER:

STEP CANAL AND LEVEE  
DETAILS

DATE: 02/09/2009

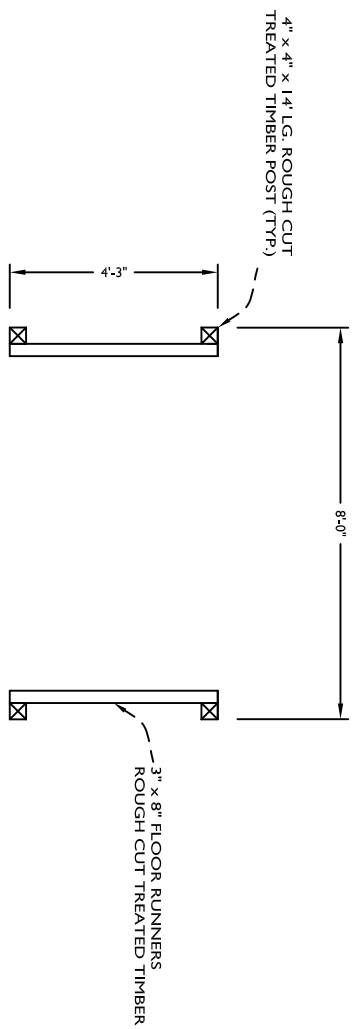
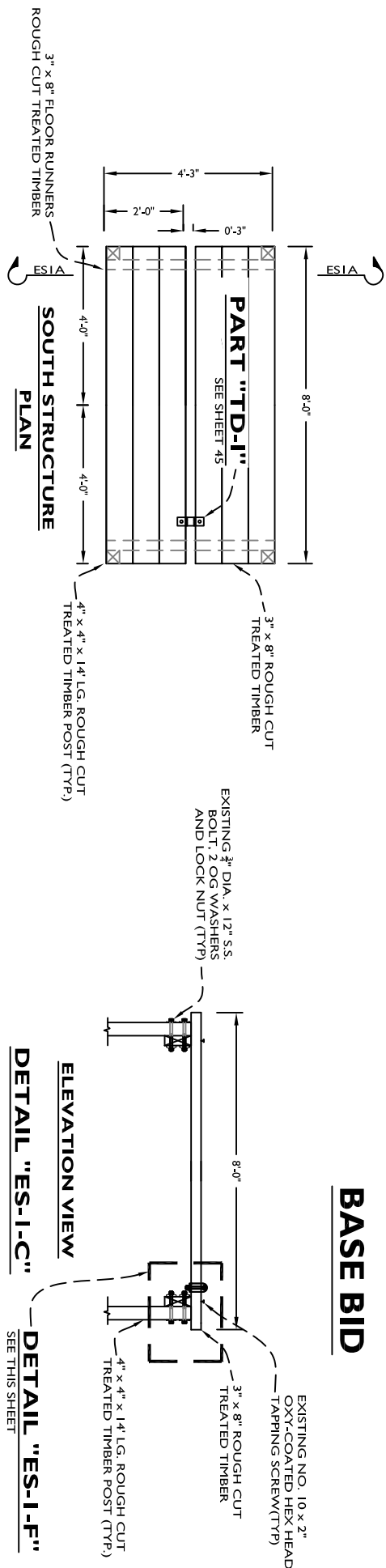
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SHEET 05 OF 47







**BASE BID**

**ELEVATION VIEW**

**DETAIL "ES-1-C"**

**DETAIL "ES-1-F"**

SEE THIS SHEET



## FRAME PLAN

### DETAIL "ES-I-D"



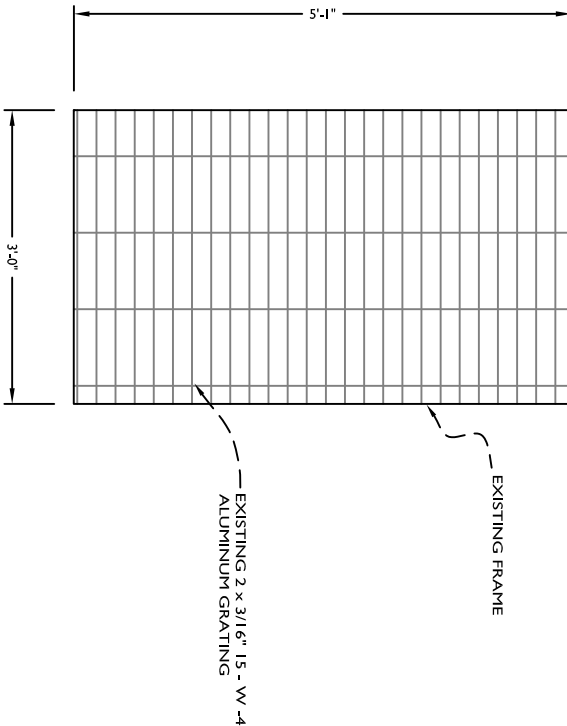
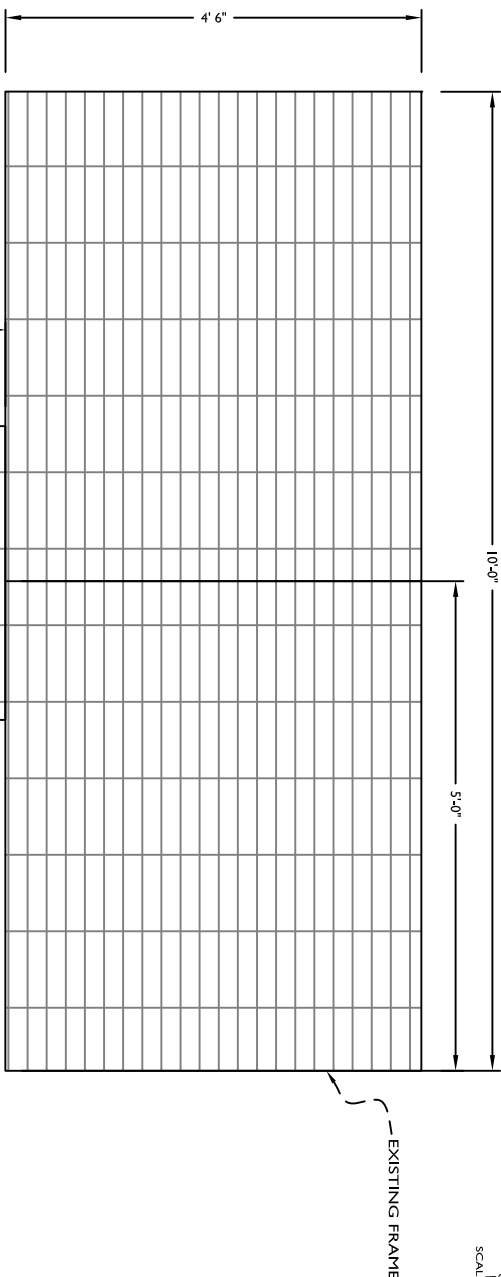
CONSIST OF ONE (1) 36" DIAMETER, BY 40' LONG CORRUGATED ALUMINUM PIPE. THERE IS A 10' LONG ALUMINUM VARIABLE CREST WEIR AT THE INLET SIDE, WHICH IS THE NORTH SIDE OF THE STRUCTURE. THERE IS AN ALUMINUM FLAP GATE ON THE OUTLET SIDE, WHICH IS THE SOUTH SIDE OF THE STRUCTURE. THE WEIR INLET IS DIVIDED INTO TWO (2) BAYS, EACH CONSISTING OF TWO FOUR INCH (4") WIDE, BY SIX FEET SIX INCHES (6'-6") TALL VERTICAL SLOTS. THERE IS A TOTAL OF TWENTY-SIX (26) THREE INCH (3") WIDE, BY SIX INCHES (6") TALL BY FOUR FEET ELEVEN INCHES (4'-11") LONG TIMBER STOP LOGS.

**GENERAL NOTES:**

1. SEE DETAIL "TD-B" ON SHEET 44 FOR PILE CAP DETAILS.
2. SEE THIS SHEET FOR TIMBER BOARDWALK DETAILS.
3. ALL SILT REMOVED FROM THE STRUCTURE SHALL BE PLACED ALONG THE ERODED BANKLINES AFTER THE EXISTING MAN SIZED RIP-RAP HAS BEEN PLACED.
4. ALL 4" x 4" TIMBER POSTS SHALL BE DRIVEN TO MATCH THE REMAINS OF THE EXISTING PLATFORM OR TO REFUSAL AND TRIMMED TO MATCH THE REMAINS OF THE EXISTING PLATFORM WHICHEVER IS GREATER.
5. THE CONTRACTOR SHALL NOT DISTURB THE EXISTING RIP RAP, WHICH SHALL REMAIN IN PLACE. HAND PLACEMENT OF THE EXISTING RIP RAP MAY BE NECESSARY.
6. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY LAND VEHICLES.
7. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY MARINE VESSELS.
8. THE CONTRACTOR SHALL INSTALL THE EXISTING RIP RAP A MINIMUM OF 12" THICK WITH 2:1 SIDE SLOPES.

### REPAIR TASKS:

- T1. REPLACE TWO (2) PILE CAPS.
- T2. REMOVE DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL C.A.P.
- T3. REPLACE THREE (3) PADLOCKS ON STRUCTURE.
- T4. INSTALL 300 TONS OF 30# CLASS ROCK ALONG THE ERODED BANK LINES ADJACENT TO THE EXISTING LEVEL.
- T5. EXTEND TIMBER BOARDWALK 8'-0" FROM STRUCTURE TO BANK
- T6. INSTALL GRATING ON THE INLET SIDE OF THE STRUCTURE.



## PLAN VIEW


### DETAIL "ES-I-E"



1. **NOTES:** ALL TIMBER DECK BOARDS SHALL HAVE A MINIMUM OF A 1/4" GAP BETWEEN BOARDS. THE CONTRACTOR SHALL RE- WELD ALL JOINTS IN UPPER DECK PLATFORM.
- 2.
3. THE CONTRACTOR SHALL FIELD WELD THE EXISTING GRATING TO THE EXISTING PLATFORM USING 2" LONG STRIPS NOT EXCEEDING EVERY 12" INCLUDING SPLICES IN THE GRATING.

2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	gil
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DESIGNED BY: LONNIE HARPER

APPROVED BY: LONNIE HARPER

MUD LAKE  
MAINTENANCE PROJECT

STATE PROJECT NUMBER: CS-20

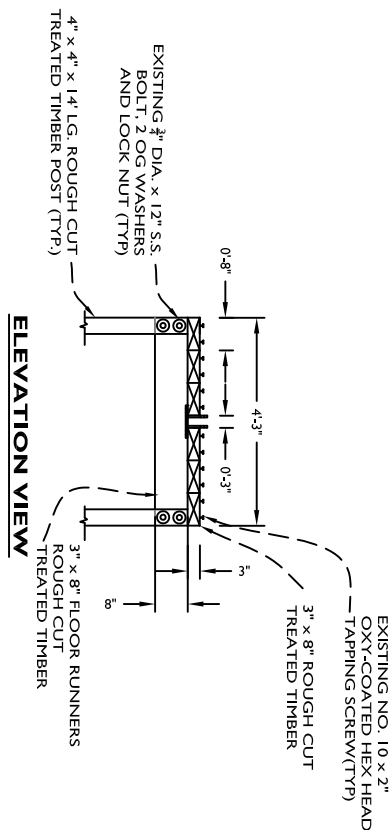
FEDERAL PROJECT NUMBER:

APPROVED BY: LONNIE HARPER

## STRUCTURE "ES-1" WALKWAY DETAILS

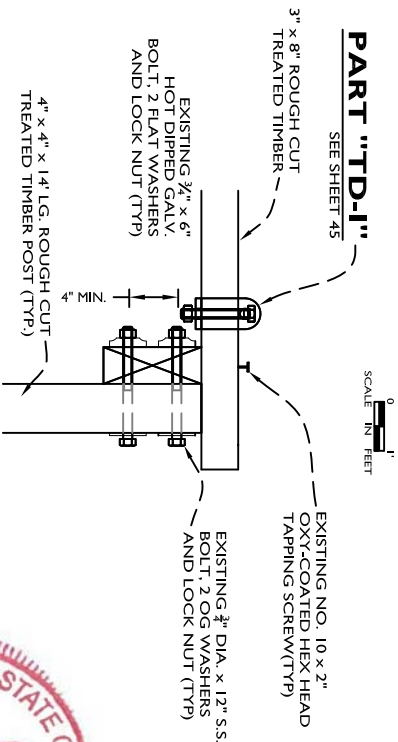
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### ELEVATION VIEW

## SECTION "ESIA-ESIA"



### ELEVATION VIEW

### DETAIL "ES-1-F"



# AS-BUILT DRAWINGS



BASE BID



EXHIBIT "ES-3-A"



STRUCTURE DESCRIPTION:

CONSIST OF ONE (1) 36" DIAMETER CORRUGATED ALUMINUM PIPE. THERE IS AN ALUMINUM VARIABLE CREST WEIR AT THE INLET SIDE, WHICH IS THE NORTH SIDE OF STRUCTURE. AND AN ALUMINUM FLAP GATE ON THE OUTLET SIDE, WHICH IS THE SOUTH SIDE OF THE STRUCTURE.

GENERAL NOTES:

1. SEE SHEETS 9 AND 10 FOR TIMBER BOARDWALK DETAILS.
2. SEE SHEET 45 FOR CENTER LOCK CHANNEL DETAILS.
3. ALL SILT REMOVED FROM THE STRUCTURE SHALL BE PLACED ALONG THE ERODED BANKLINES AFTER THE EXISTING MAN SIZED RIP-RAP HAS BEEN PLACED.
4. ALL 4" x 4" TIMBER POSTS SHALL BE DRIVEN TO MATCH THE REMAINS OF THE EXISTING PLATFORM OR TO REFUSAL AND TRIMMED TO MATCH THE REMAINS OF THE EXISTING PLATFORM WHICHEVER IS GREATER.
5. THE CONTRACTOR SHALL NOT DISTURB THE EXISTING RIP RAP, WHICH SHALL REMAIN IN PLACE. HAND PLACEMENT OF THE EXISTING RIP RAP MAY BE NECESSARY.
6. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY LAND VEHICLES.
7. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY MARINE VESSELS.
8. THE CONTRACTOR SHALL INSTALL THE EXISTING RIP RAP A MINIMUM OF 12" THICK WITH 2:1 SIDE SLOPES.
9. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE EXISTING TIMBER PLATFORM.

MAINTENANCE TASKS:

- T1. REMOVE DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL C.A.P.
- T2. REPLACE THREE (3) PADLOCKS ON STRUCTURE.
- T3. INSTALL 379 TONS OF 30# CLASS ROCK (MIN. THICKNESS OF 12 INCHES) ALONG THE ERODED BANK LINES ADJACENT TO THE EXISTING LEVEE. (70% DNR, 30% FEMA)
- T4. REPLACE TIMBER BOARDWALKS ON BOTH SIDES OF STRUCTURE 13'-0" FROM STRUCTURE TO BANK ON NORTH SIDE AND 12'-0" FROM STRUCTURE TO BANK ON SOUTH SIDE. (FEMA)
- T5. REPAIR THE CENTER LOCK CHANNEL ON STOP LOG BAY (SEE SHEET 45) (PART "TD-H").

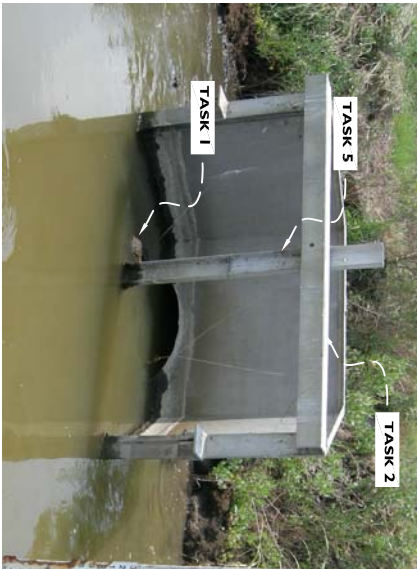


EXHIBIT "ES-3-B"

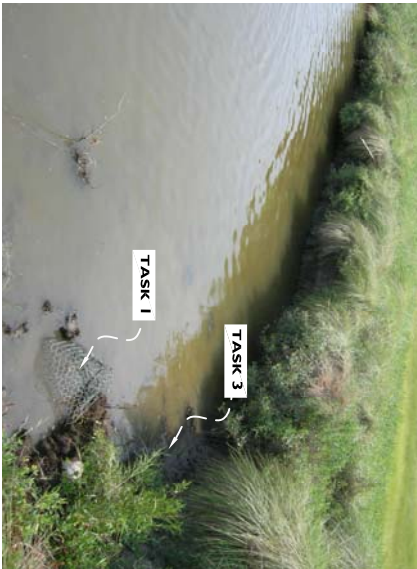


EXHIBIT "ES-3-D"



EXHIBIT "ES-3-C"



EXHIBIT "ES-3-E"



EXHIBIT "ES-3-G"






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STATE OF LOUISIANA  
OFFICE OF COASTAL PROTECTION  
AND RESTORATION  
450 LAUREL ST., SUITE 1501  
BATON ROUGE, LOUISIANA 70801

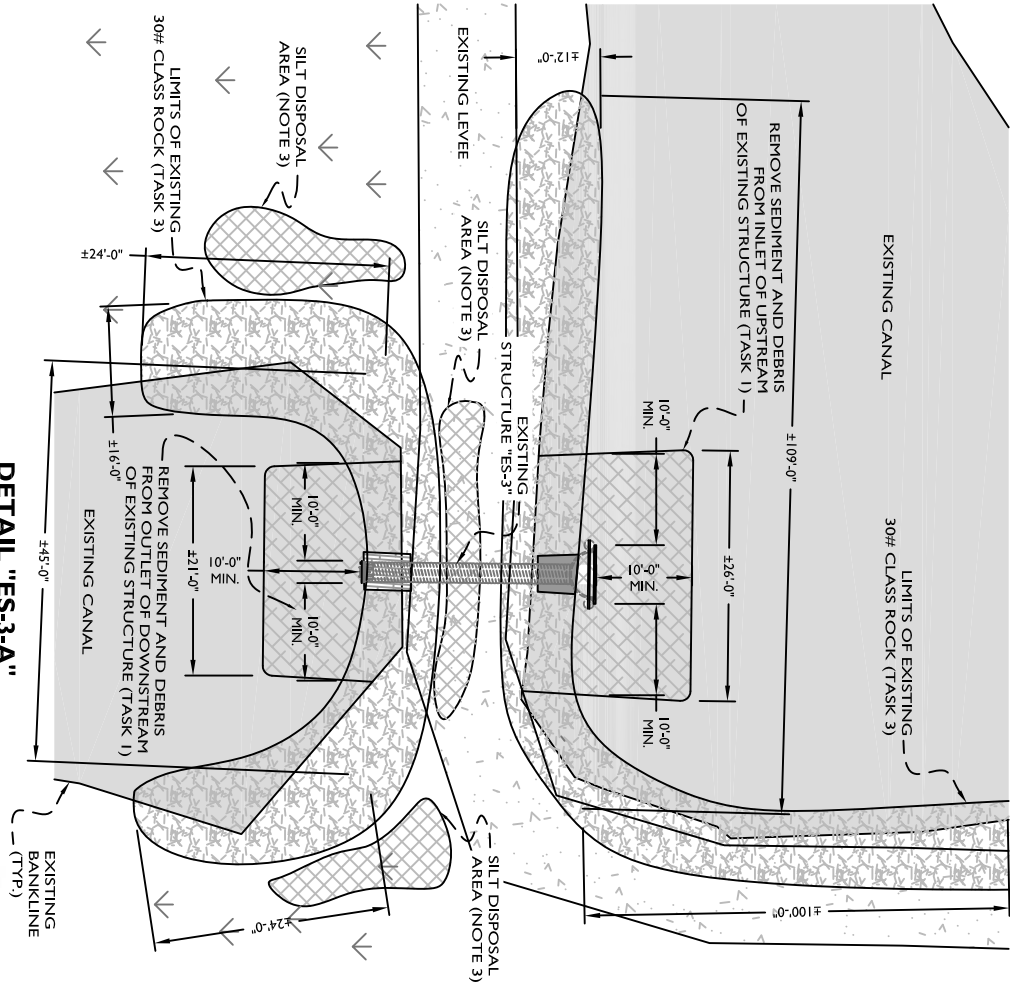
MUD LAKE  
MAINTENANCE PROJECT  
STATE PROJECT NUMBER: CS-20

STRUCTURE "ES-3"  
DETAILS AND EXHIBITS  
DATE: 02/09/2009

APPROVED BY: LONNIE HARPER

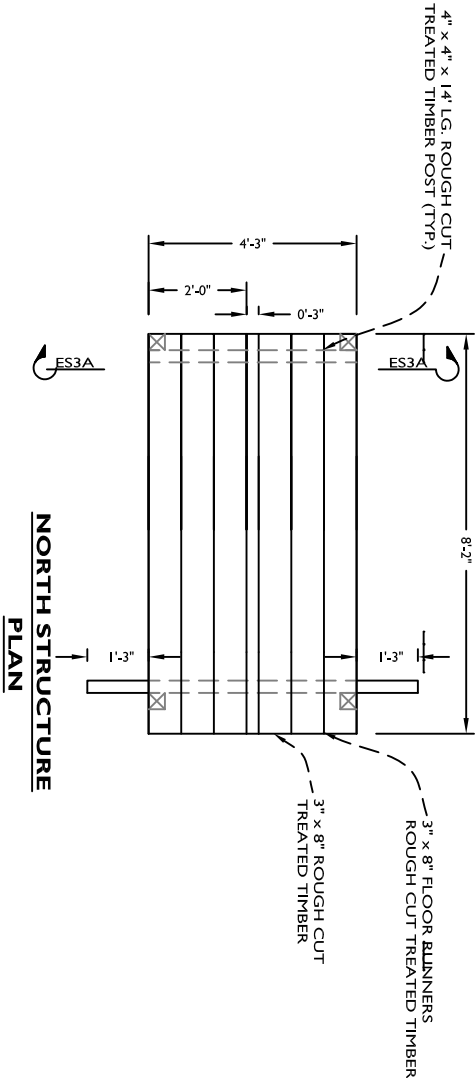
SHEET 8 OF 47

AS-BUILT DRAWINGS



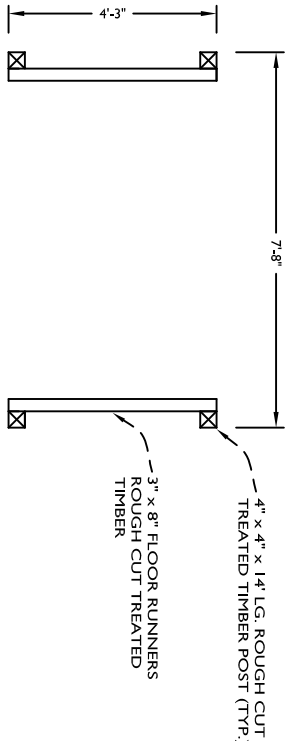


BASE BID



DETAIL "ES-3-B"

0 1' SCALE IN FEET



FRAME PLAN

DETAIL "ES-3-C"

0 1' SCALE IN FEET

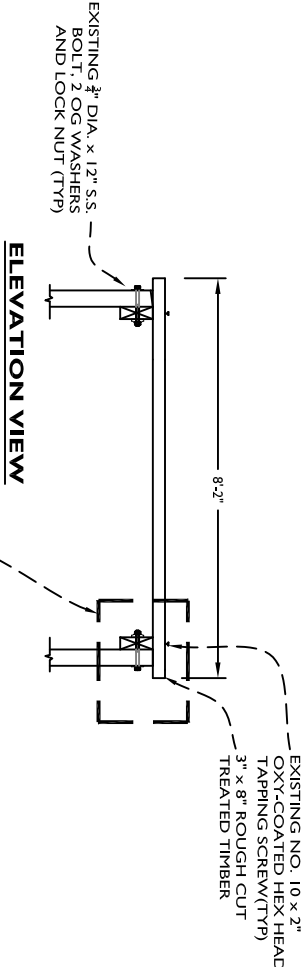
CONSIST OF ONE (1) 36" DIAMETER CORRUGATED ALUMINUM PIPE. THERE IS AN ALUMINUM VARIABLE CREST WEIR AT THE INLET SIDE, WHICH IS THE NORTH SIDE OF STRUCTURE. AND AN ALUMINUM FLAP GATE ON THE OUTLET SIDE, WHICH IS THE SOUTH SIDE OF THE STRUCTURE.

GENERAL NOTES:

1. SEE THIS SHEET AND SHEET 10 FOR TIMBER BOARDWALK DETAILS.
2. SEE SHEETS 45 FOR CENTER LOCK CHANNEL DETAILS.
2. ALL SILT REMOVED FROM THE STRUCTURE SHALL BE PLACED ALONG THE ERODED BANKLINES AFTER THE EXISTING MAN SIZED RIP-RAP HAS BEEN PLACED.
3. ALL 4" x 4" TIMBER POSTS SHALL BE DRIVEN TO MATCH THE REMAINS OF THE EXISTING PLATFORM OR TO REFUSAL AND TRIMMED TO MATCH THE REMAINS OF THE EXISTING PLATFORM WHICHEVER IS GREATER.
4. THE CONTRACTOR SHALL NOT DISTURB THE EXISTING RIP RAP WHICH SHALL REMAIN IN PLACE. HAND PLACEMENT OF THE EXISTING RIP RAP MAY BE NECESSARY.
5. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY LAND VEHICLES.
6. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY MARINE VESSELS.
7. THE CONTRACTOR SHALL INSTALL THE EXISTING RIP RAP A MINIMUM OF 12" THICK WITH 2:1 SIDE SLOPES.
8. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE EXISTING TIMBER PLATFORM.

MAINTENANCE TASKS:

- T1. REMOVE DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL C.A.P.
- T2. REPLACE THREE (3) PADLOCKS ON STRUCTURE.
- T3. INSTALL 379 TONS OF 30 # CLASS ROCK (MIN. THICKNESS OF 12 INCHES) ALONG THE ERODED BANK LINES ADJACENT TO THE EXISTING LEVEE. (70% DNR, 30% FEMA)
- T4. REPLACE TIMBER BOARDWALKS ON BOTH SIDES OF STRUCTURE 8'-2" FROM STRUCTURE TO BANK ON NORTH SIDE AND 10'-0" FROM STRUCTURE TO BANK ON SOUTH SIDE. (FEMA)
- T5. REPAIR THE CENTER LOCK CHANNEL ON STOP LOG BAY.

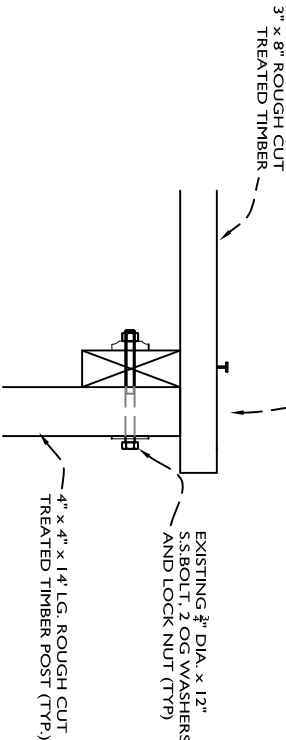


DETAIL "ES-3-D"

0 1' SCALE IN FEET

DETAIL "ES-3-H"

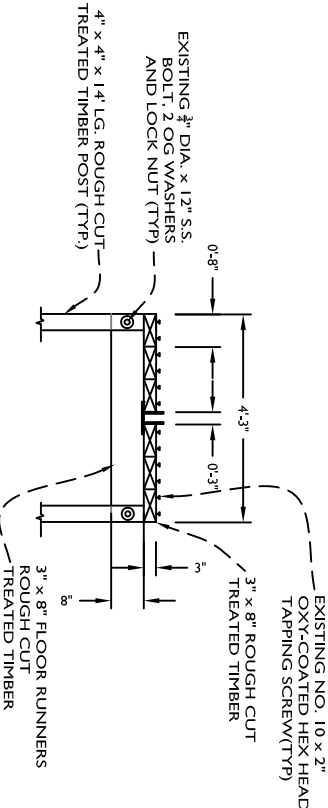
SEE THIS SHEET



ELEVATION VIEW

DETAIL "ES-3-H"

0 1' SCALE IN FEET



ELEVATION VIEW

SECTION "ES3A-ES3A"

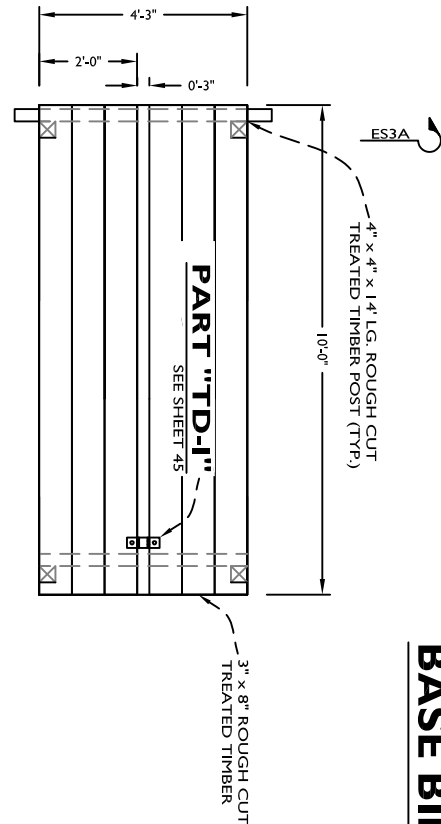
0 1' SCALE IN FEET

AS-BUILT DRAWINGS



<div>NOTES: 1. ALL TIMBER DECK BOARDS SHALL HAVE A MINIMUM OF A 1/4" GAP BETWEEN BOARDS.</div>				<div>0 1 SCALE IN FEET</div>				<div>AS-BUILT DRAWINGS</div>			
				<div><div><div><div><div></div></div><div><div></div></div></div><div><div></div></div><div><div></div></div></div><div>2746 Hwy 384, Ball City, Louisiana 70630 PHONE: (337) 905-1079 FAX: (337) 905-1076</div></div>				<div>STATE OF LOUISIANA OFFICE OF COASTAL PROTECTION AND RESTORATION 450 LAUREL ST., SUITE 1501 BATON ROUGE, LOUISIANA 70801</div> <div>MUD LAKE MAINTENANCE PROJECT</div> <div>STATE PROJECT NUMBER: CS-20</div> <div>FEDERAL PROJECT NUMBER:</div> <div>APPROVED BY: LONNIE HARPER</div>			
2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS		gj							
REV.	DATE	DESCRIPTION		BY							

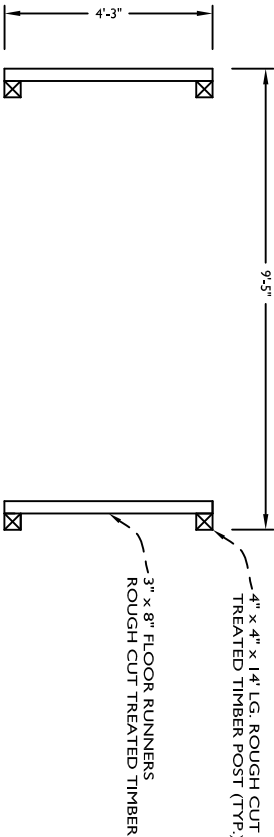
BASE BID



ES3A

SOUTH STRUCTURE  
PLAN

DETAIL "ES-3-E"



FRAME PLAN

DETAIL "ES-3-F"



STRUCTURE DESCRIPTION:

CONSIST OF ONE (1) 36" DIAMETER CORRUGATED ALUMINUM PIPE. THERE IS AN ALUMINUM VARIABLE CREST WEIR AT THE INLET SIDE, WHICH IS THE NORTH SIDE OF STRUCTURE. AND AN ALUMINUM FLAP GATE ON THE OUTLET SIDE, WHICH IS THE SOUTH SIDE OF THE STRUCTURE.

GENERAL NOTES:

1. SEE SHEET 9 AND THIS SHEET FOR TIMBER BOARDWALK DETAILS.
2. SEE SHEETS 45 FOR CENTER LOCK CHANNEL DETAILS.
2. ALL SILT REMOVED FROM THE STRUCTURE SHALL BE PLACED ALONG THE ERODED BANKLINES AFTER THE EXISTING MAN SIZED RIP-RAP HAS BEEN PLACED.
3. ALL 4" x 4" TIMBER POSTS SHALL BE DRIVEN TO MATCH THE REMAINS OF THE EXISTING PLATFORM OR TO REFUSAL AND TRIMMED TO MATCH THE REMAINS OF THE EXISTING PLATFORM WHICHEVER IS GREATER.
4. THE CONTRACTOR SHALL NOT DISTURB THE EXISTING RIP RAP, WHICH SHALL REMAIN IN PLACE. HAND PLACEMENT OF THE EXISTING RIP RAP MAY BE NECESSARY.
5. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY LAND VEHICLES.
6. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY MARINE VESSELS.
7. THE CONTRACTOR SHALL INSTALL THE EXISTING RIP RAP A MINIMUM OF 12" THICK WITH 2:1 SIDE SLOPES.
8. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE EXISTING TIMBER PLATFORM.

MAINTENANCE TASKS:

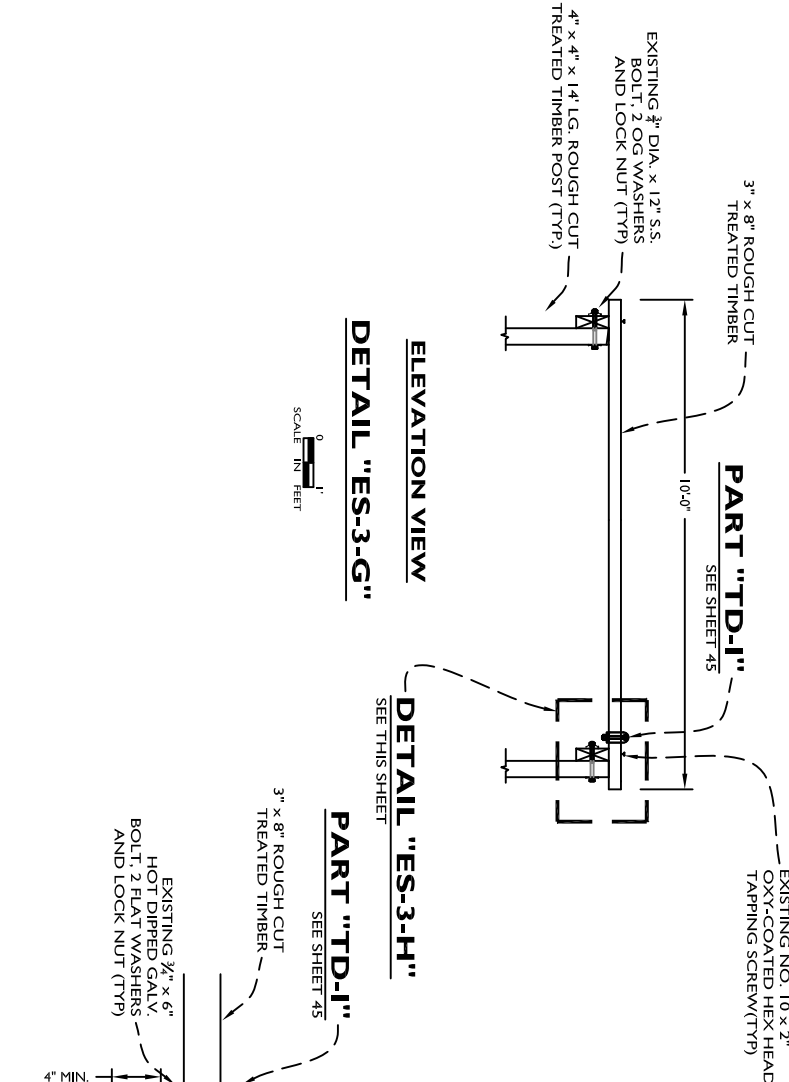
- T1. REMOVE DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL C.A.P.
- T2. REPLACE THREE (3) PADLOCKS ON STRUCTURE.
- T3. INSTALL 379 TONS OF 30# CLASS ROCK (MIN. THICKNESS OF 12 INCHES) ALONG THE ERODED BANK LINES ADJACENT TO THE EXISTING LEVEE. (70% DNR, 30%FEMA)
- T4. REPLACE TIMBER BOARDWALKS ON BOTH SIDES OF STRUCTURE 8'-2" FROM STRUCTURE TO BANK ON NORTH SIDE AND 10'-0" FROM STRUCTURE TO BANK ON SOUTH SIDE. (FEMA)
- T5. REPAIR THE CENTER LOCK CHANNEL ON STOP LOG BAY.

ELEVATION VIEW  
DETAIL "ES-3-G"



DETAIL "ES-3-H"

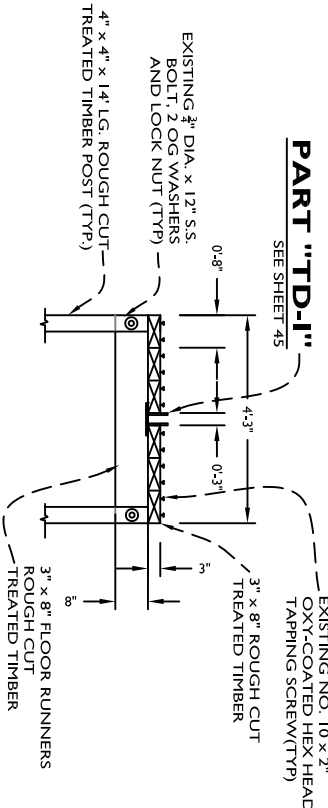
SEE THIS SHEET



ELEVATION VIEW  
DETAIL "ES-3-H"




ELEVATION VIEW  
SECTION "ES3A-ES3A"

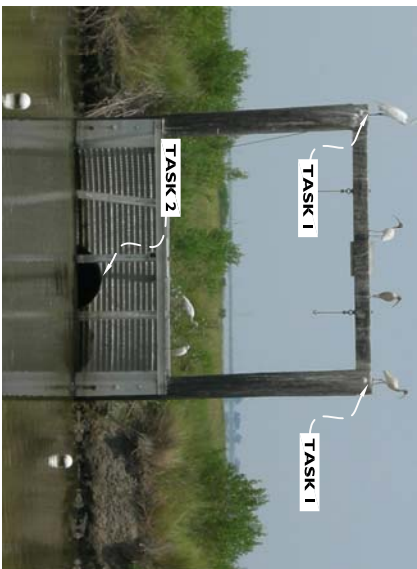


AS-BUILT DRAWINGS



<b>NOTES:</b> 1. ALL TIMBER DECK BOARDS SHALL HAVE A MINIMUM OF A 1/4" GAP BETWEEN BOARDS.			
REV.	DATE	DESCRIPTION	BY
2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	[signature]
			
		LONNIE G. HARPER and Associates, Inc. CIVIL ENGINEERING AND LAND SURVEYING 2746 Hwy 384, Bell City, Louisiana 70630 PHONE: (337) 905-1079 FAX: (337) 905-1076	
		STATE OF LOUISIANA OFFICE OF COASTAL PROTECTION AND RESTORATION 450 LAUREL ST., SUITE 1501 BATON ROUGE, LOUISIANA 70801	
		DRAWN BY: AARON HARPER	DESIGNED BY: LONNIE HARPER
		MUD LAKE MAINTENANCE PROJECT	STRUCTURE "ES-3" WALKWAY DETAILS
		STATE PROJECT NUMBER: CS-20	DATE: 02/09/2009
		FEDERAL PROJECT NUMBER:	SHEET 10 OF 47
		APPROVED BY: LONNIE HARPER	



**BASE BID**

**EXHIBIT "ES-5-A"**



**STRUCTURE DESCRIPTION:**

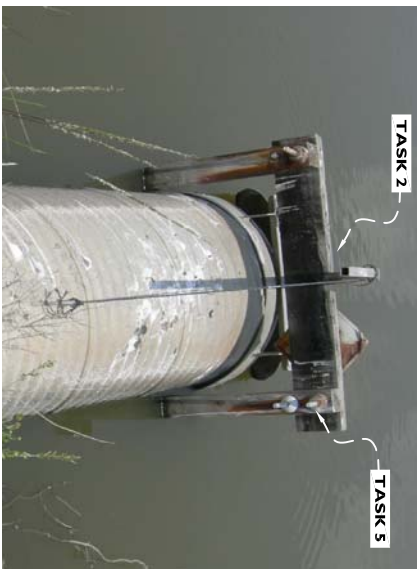
CONSIST OF ONE (1) 36" DIAMETER, BY 35' LONG, NO. 10 GAUGE CORRUGATED ALUMINUM PIPE. THERE IS A 10' LONG ALUMINUM VARIABLE CREST WEIR AT THE INLET SIDE, WHICH IS THE SOUTH SIDE OF STRUCTURE. THE WEIR INLET IS DIVIDED INTO TWO (2) BAYS, EACH CONSISTING OF A FOUR INCH (4") WIDE BY SIX FEET SIX INCHES (6'-6") TALL VERTICAL SLOT. THERE IS A TOTAL OF TWENTY-SIX (26) THREE INCH (3") WIDE, BY SIX INCHES (6") TALL, BY FOUR FEET ELEVEN INCHES (4'-11") LONG, TIMBER STOP LOGS.

**GENERAL NOTES:**

1. SEE DETAIL "TD-B" ON SHEET 44 FOR PILE CAP DETAILS.
2. SEE SHEET 12 FOR TIMBER BOARDWALK DETAILS.
3. ALL SILT REMOVED FROM THE STRUCTURE SHALL BE PLACED ALONG THE ERODED BANKLINES AFTER THE EXISTING MAN SIZED RIP-RAP HAS BEEN PLACED.
4. ALL 4" x 4" TIMBER POSTS SHALL BE DRIVEN TO MATCH THE REMAINS OF THE EXISTING PLATFORM OR TO REFUSAL AND TRIMMED TO MATCH THE REMAINS OF THE EXISTING PLATFORM WHICHEVER IS GREATER.
5. THE CONTRACTOR SHALL NOT DISTURB THE EXISTING RIP RAP, WHICH SHALL REMAIN IN PLACE. HAND PLACEMENT OF THE EXISTING RIP RAP MAY BE NECESSARY.
6. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY LAND VEHICLES.
7. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY MARINE VESSELS.
8. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE EXISTING TIMBER PLATFORM.

### MAINTENANCE TASKS:

- T1. REPLACE TWO (2) PILE CAPS.
- T2. REMOVE SEDIMENT AND DEBRIS FROM WITHIN AND FROM BOTH ENDS OF ALL C.A.P.
- T3. REPLACE THREE (3) PADLOCKS ON STRUCTURE.
- T4. INSTALL 300 TONS OF 30# CLASS ROCK (MIN. THICKNESS OF 12 INCHES)ALONG THE ERODED BANK LINES OF THE UPSTREAM END OF STRUCTURE ADJACENT TO THE EXISTING ROADWAY. (40% DNR, 60% FEMA)
- T5. EXTEND BOARDWALK 16'-0"



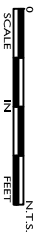
**EXHIBIT "ES-5-B"**



**EXHIBIT "ES-5-D"**



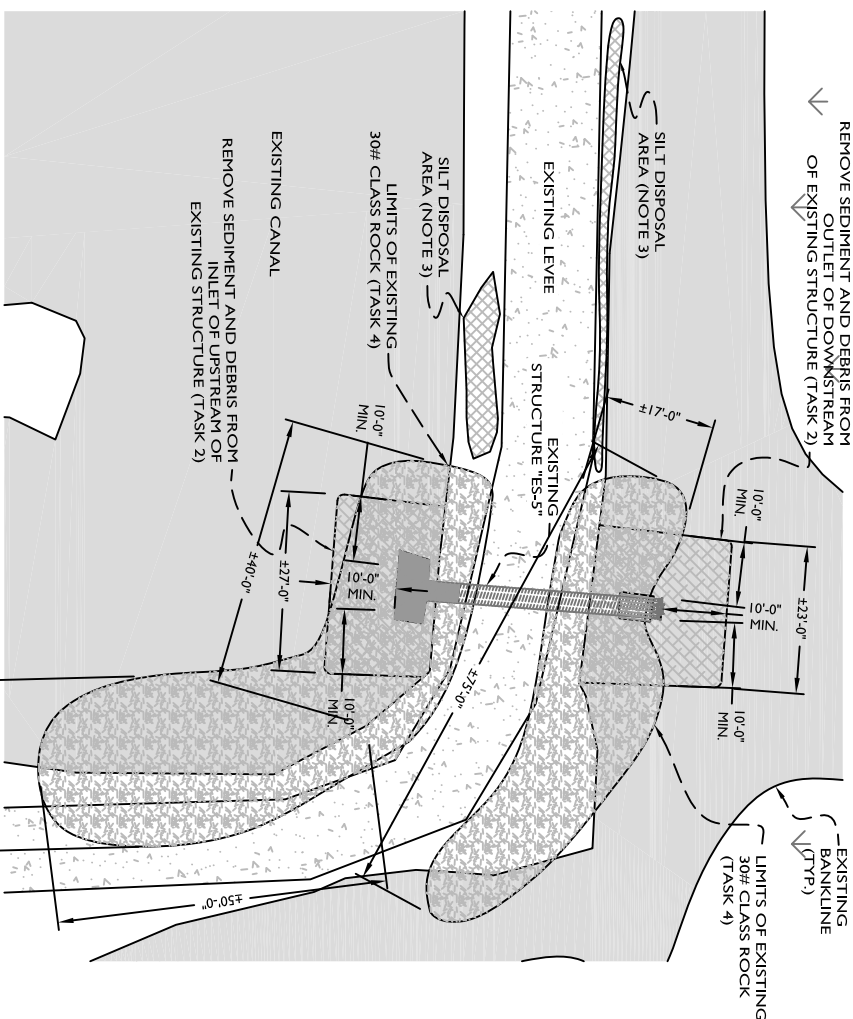
**DETAIL "ES-5-F"**



**EXHIBIT "ES-5-C"**



**DETAIL "ES-5-E"**



**DETAIL "ES-5-A"**

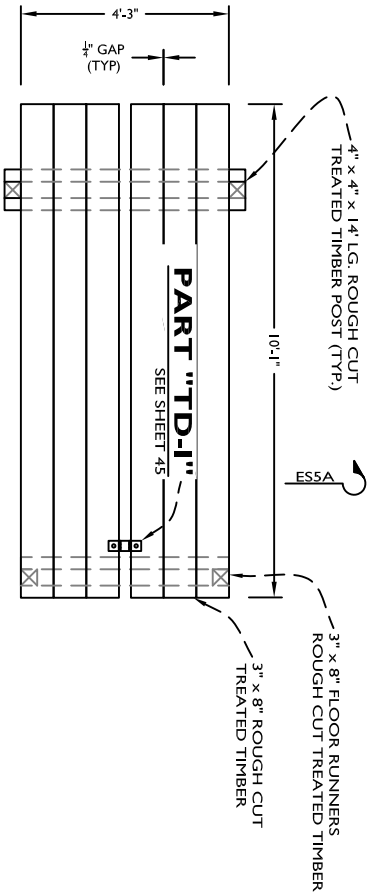


# AS-BUILT DRAWINGS

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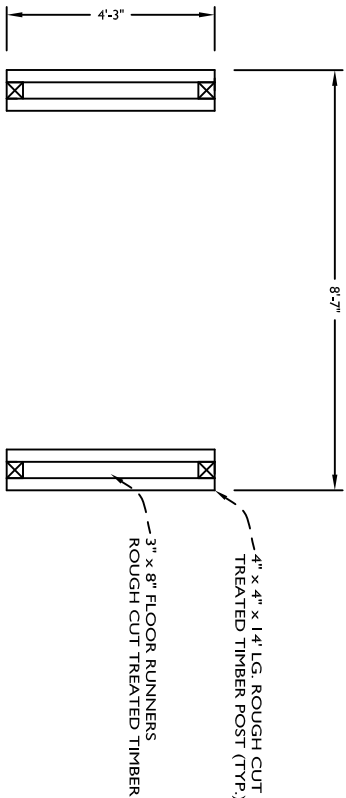


BASE BID



NORTH STRUCTURE  
PLAN

DETAIL "ES-5-B"



FRAME PLAN

DETAIL "ES-5-C"

CONSIST OF ONE (1) 36" DIAMETER, BY 35' LONG, NO. 10 GAUGE CORRUGATED ALUMINUM PIPE. THERE IS A 10' LONG ALUMINUM VARIABLE CREST WEIR AT THE INLET SIDE. WHICH IS THE SOUTH SIDE OF STRUCTURE. THE WEIR INLET IS DIVIDED INTO TWO (2) BAYS, EACH CONSISTING OF A FOUR INCH (4") WIDE BY SIX FEET SIX INCHES (6'-6") TALL VERTICAL SLOT.THERE IS A TOTAL OF TWENTY-SIX (26) THREE INCH (3") WIDE, BY SIX INCHES (6") TALL, BY FOUR FEET ELEVEN INCHES (4'-11") LONG, TIMBER STOP LOGS.

GENERAL NOTES:

- SEE DETAIL "TD-B" ON SHEET 44 FOR PILE CAP DETAILS.
- SEE THIS SHEET FOR TIMBER BOARDWALK DETAILS.
- ALL SILT REMOVED FROM THE STRUCTURE SHALL BE PLACED ALONG THE ERODED BANKLINES AFTER THE EXISTING MAN SIZED RIP-RAP HAS BEEN PLACED.
- ALL 4" x 4" TIMBER POSTS SHALL BE DRIVEN TO MATCH THE REMAINS OF THE EXISTING PLATFORM OR TO REFUSAL AND TRIMMED TO MATCH THE REMAINS OF THE EXISTING PLATFORM WHICHEVER IS GREATER.
- THE CONTRACTOR SHALL NOT DISTURB THE EXISTING RIP RAP, WHICH SHALL REMAIN IN PLACE. HAND PLACEMENT OF THE EXISTING RIP RAP MAY BE NECESSARY.
- THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY LAND VEHICLES.
- THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY MARINE VESSELS.
- THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE EXISTING TIMBER PLATFORM.

MAINTENANCE TASKS:

- REPLACE TWO (2) PILE CAPS.
- REMOVE SEDIMENT AND DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL C.A.P.
- REPLACE THREE (3) PADLOCKS ON STRUCTURE.
- INSTALL 300 TONS OF 30# CLASS ROCK (MIN. THICKNESS OF 12 INCHES)ALONG THE ERODED BANK LINES OF THE UPSTREAM END OF STRUCTURE ADJACENT TO THE EXISTING ROADWAY. (40% DNR, 60% FEMA)
- EXTEND BOARDWALK 10'-1"

NOTES:

1. ALL TIMBER DECK BOARDS SHALL HAVE A MINIMUM OF A 1/2" GAP BETWEEN BOARDS.

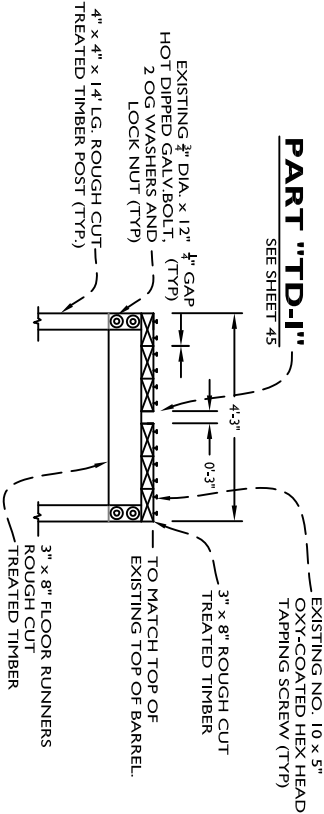
REV.	DATE	DESCRIPTION	BY
2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	[signature]



LONNIE G. HARPER  
and Associates, Inc.  
CIVIL ENGINEERING  
AND LAND SURVEYING  
2746 Hwy 384, Ball City, Louisiana 70630  
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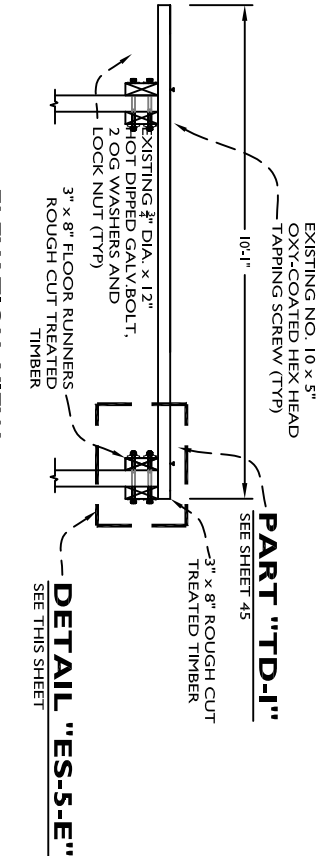


SECTION "ESSA-ESSA"

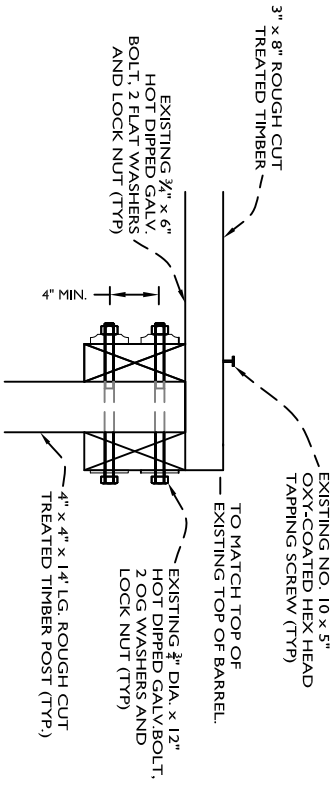
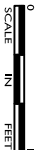


ELEVATION VIEW

DETAIL "ES-5-D"



DETAIL "ES-5-E"

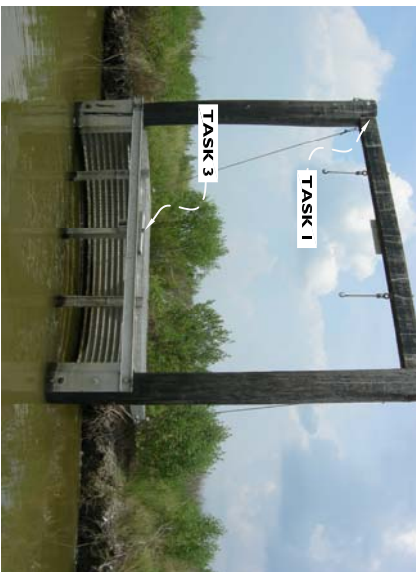


AS-BUILT DRAWINGS



STATE OF LOUISIANA OFFICE OF COASTAL PROTECTION AND RESTORATION 450 LAUREL ST., SUITE 1501 BATON ROUGE, LOUISIANA 70801		MUD LAKE MAINTENANCE PROJECT STATE PROJECT NUMBER: CS-20	STRUCTURE "ES-5" WALKWAY DETAILS DATE: 02/09/2009
DRAWN BY: AARON HARPER	DESIGNED BY: LONNIE HARPER	APPROVED BY: LONNIE HARPER	
		SHEET 12 OF 47	



**BASE BID**

**EXHIBIT "ES-11-A"**



**EXHIBIT "ES-11-B"**



**EXHIBIT "ES-11-C"**



**EXHIBIT "ES-11-D"**



**EXHIBIT "ES-11-E"**



**EXHIBIT "ES-11-F"**




1. SEE DETAIL "TD-B" ON SHEET 44 FOR PILE CAP DETAILS.
2. SEE SHEET 14 FOR TIMBER BOARDWALK DETAILS.
3. ALL SILT REMOVED FROM THE STRUCTURE SHALL BE PLACED ALONG THE ERODED BANKLINES AFTER THE EXISTING MAN SIZED RIP-RAP HAS BEEN PLACED.
4. ALL 4" x 4" TIMBER POSTS SHALL BE DRIVEN TO MATCH THE REMAINS OF THE EXISTING PLATFORM OR TO REFUSAL AND TRIMMED TO MATCH THE REMAINS OF THE EXISTING PLATFORM WHICHEVER IS GREATER.
5. THE CONTRACTOR SHALL NOT DISTURB THE EXISTING RIP RAP, WHICH SHALL REMAIN IN PLACE. HAND PLACEMENT OF THE EXISTING RIP RAP MAY BE NECESSARY.
6. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY LAND VEHICLES.
7. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY MARINE VESSELS.
8. THE CONTRACTOR SHALL INSTALL THE EXISTING RIP RAP A MINIMUM OF 12" THICK WITH 2:1 SIDE SLOPES.

### MAINTENANCE TASKS:

- T1. REPLACE TWO (2) PILE CAPS.
- T2. REMOVE DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL C.A.P.
- T3. REPLACE THREE (3) PADLOCKS ON STRUCTURE.
- T4. INSTALL 227.31 TONS OF 30# CLASS ROCK (MIN. THICKNESS OF 12 INCHES) ALONG THE ERODED BANK LINES ADJACENT TO THE EXISTING LEVEE. (47% DNR, 53% FEMA)
- T5. EXTEND TIMBER BOARDWALK 10'-0" FROM STRUCTURE TO BANK. (FEMA)

REV.	DATE	REVERSED ACCORDING TO AS-BUILT CONDITIONS DESCRIPTION	CLOW BY	
2	04/04/11			



**LONNIE G. HARPER**  
and Associates, Inc.  
**CIVIL ENGINEERING  
AND LAND SURVEYING**

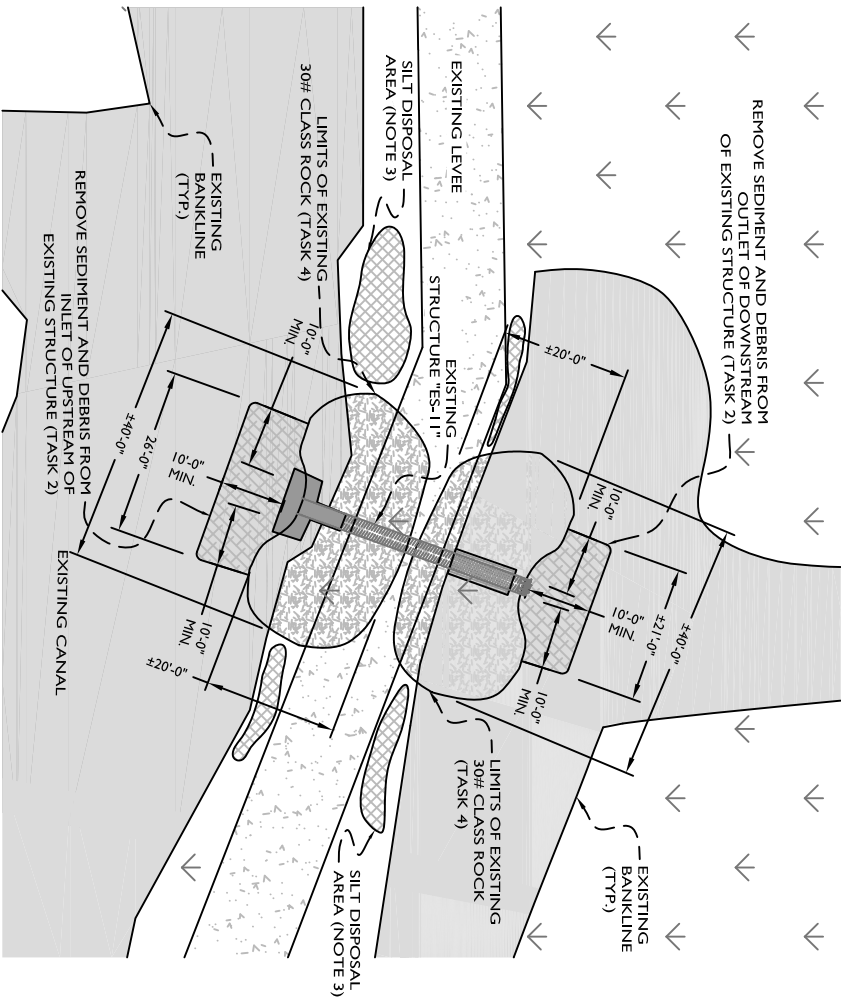
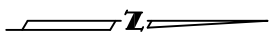
2746 Hwy 384, Bell City, Louisiana 70630  
PHONE: (337) 905-1079 FAX: (337) 905-1076

STATE OF LOUISIANA  
OFFICE OF COASTAL PROTECTION  
AND RESTORATION  
450 LAUREL ST., SUITE 1501  
BATON ROUGE, LOUISIANA 70801

DRAWN BY: AARON HARPER	DESIGNED BY: LONNIE HARPER
------------------------	----------------------------

MUD LAKE MAINTENANCE PROJECT	
STATE PROJECT NUMBER:	CS-20
FEDERAL PROJECT NUMBER:	
APPROVED BY: LONNIE HARPER	

STRUCTURE "ES-11" DETAILS AND EXHIBITS
DATE: 02/09/2009
SHEET 13 OF 47



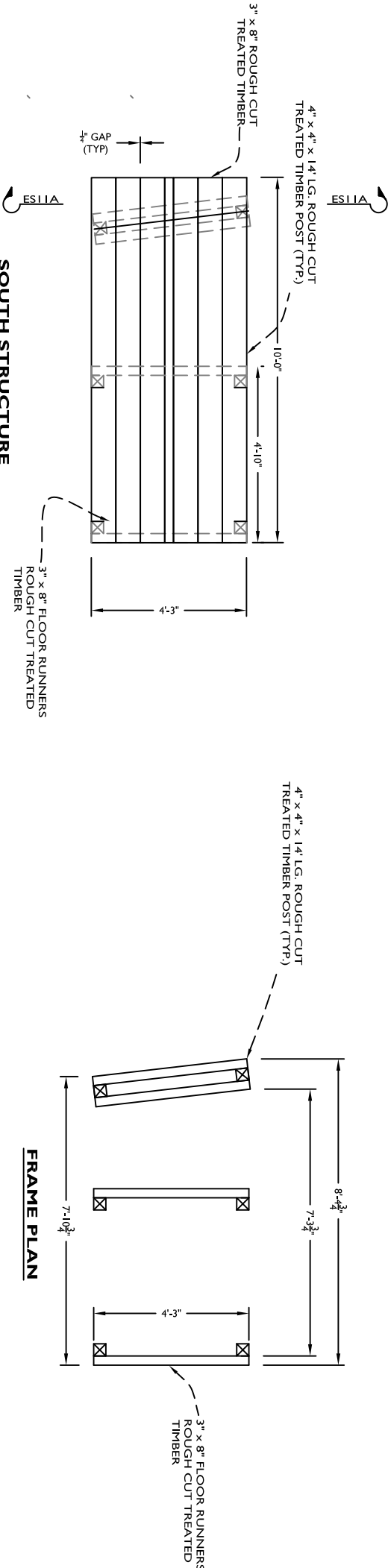
**DETAIL "ES-11-A"**



# AS-BUILT DRAWINGS



BASE BID



STRUCTURE DESCRIPTION:

CONSIST OF ONE (1) 36" DIAMETER, BY 35' LONG, NO. 10 GAUGE CORRUGATED ALUMINUM PIPE. THERE IS A 10' LONG ALUMINUM VARIABLE CREST WEIR AT THE INLET SIDE, WHICH IS THE SOUTH SIDE OF STRUCTURE. THERE IS ALSO AN ALUMINUM FLAP GATE ON THE OUTLET SIDE, WHICH IS THE NORTH SIDE OF THE STRUCTURE. THE WEIR INLET IS DIVIDED INTO TWO (2) BAYS, EACH CONSISTING OF A FOUR INCH (4") WIDE BY SIX FEET SIX INCHES (6'-6") TALL VERTICAL SLOT. THERE IS A TOTAL OF TWENTY-SIX (26) THREE INCH (3") WIDE, BY SIX INCHES (6") TALL, BY FOUR FEET ELEVEN INCHES (4'-11") LONG, TIMBER STOP LOGS.

GENERAL NOTES:

1. SEE DETAIL "TD-B" ON SHEET 44 FOR PILE CAP DETAILS.
2. SEE THIS SHEET FOR TIMBER BOARDWALK DETAILS.
3. ALL SILT REMOVED FROM THE STRUCTURE SHALL BE PLACED ALONG THE ERODED BANKLINES AFTER THE EXISTING MAN SIZED RIP-RAP HAS BEEN PLACED.
4. ALL 4" x 4" TIMBER POSTS SHALL BE DRIVEN TO MATCH THE REMAINS OF THE EXISTING PLATFORM OR TO REFUSAL AND TRIMMED TO MATCH THE REMAINS OF THE EXISTING PLATFORM, WHICHEVER IS GREATER.
5. THE CONTRACTOR SHALL NOT DISTURB THE EXISTING RIP RAP, WHICH SHALL REMAIN IN PLACE. HAND PLACEMENT OF THE EXISTING RIP RAP MAY BE NECESSARY.
6. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY LAND VEHICLES.
7. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY MARINE VESSELS.
8. THE CONTRACTOR SHALL INSTALL THE EXISTING RIP RAP A MINIMUM OF 12" THICK WITH 2:1 SIDE SLOPES.

MAINTENANCE TASKS:

- T1. REPLACE TWO (2) PILE CAPS.
- T2. REMOVE DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL C.A.P.
- T3. REPLACE THREE (3) PADLOCKS ON STRUCTURE.
- T4. INSTALL 227.31 TONS OF 30# CLASS ROCK (MIN. THICKNESS OF 12 INCHES) ALONG THE ERODED BANK LINES ADJACENT TO THE EXISTING LEVEE. (47% DNR, 53% FEMA)
- T5. EXTEND TIMBER BOARDWALK 10'-0" FROM STRUCTURE TO BANK. (FEMA)

NOTES:  
1. ALL TIMBER DECK BOARDS SHALL HAVE A MINIMUM OF A 1/4" GAP BETWEEN BOARDS.

REV.	DATE	DESCRIPTION	BY
2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	gj



LONNIE G. HARPER  
and Associates, Inc.  
CIVIL ENGINEERING  
AND LAND SURVEYING  
2746 Hwy 384, Bell City, Louisiana 70630  
PHONE: (337) 905-1079 FAX: (337) 905-1076

STATE OF LOUISIANA  
OFFICE OF COASTAL PROTECTION  
AND RESTORATION

450 LAUREL ST., SUITE 1501  
BATON ROUGE, LOUISIANA 70801

DRAWN BY: AARON HARPER

DESIGNED BY: LONNIE HARPER

MUD LAKE  
MAINTENANCE PROJECT

STATE PROJECT NUMBER: CS-20

FEDERAL PROJECT NUMBER:

APPROVED BY: LONNIE HARPER

STRUCTURE "ES-11"  
WALKWAY DETAILS

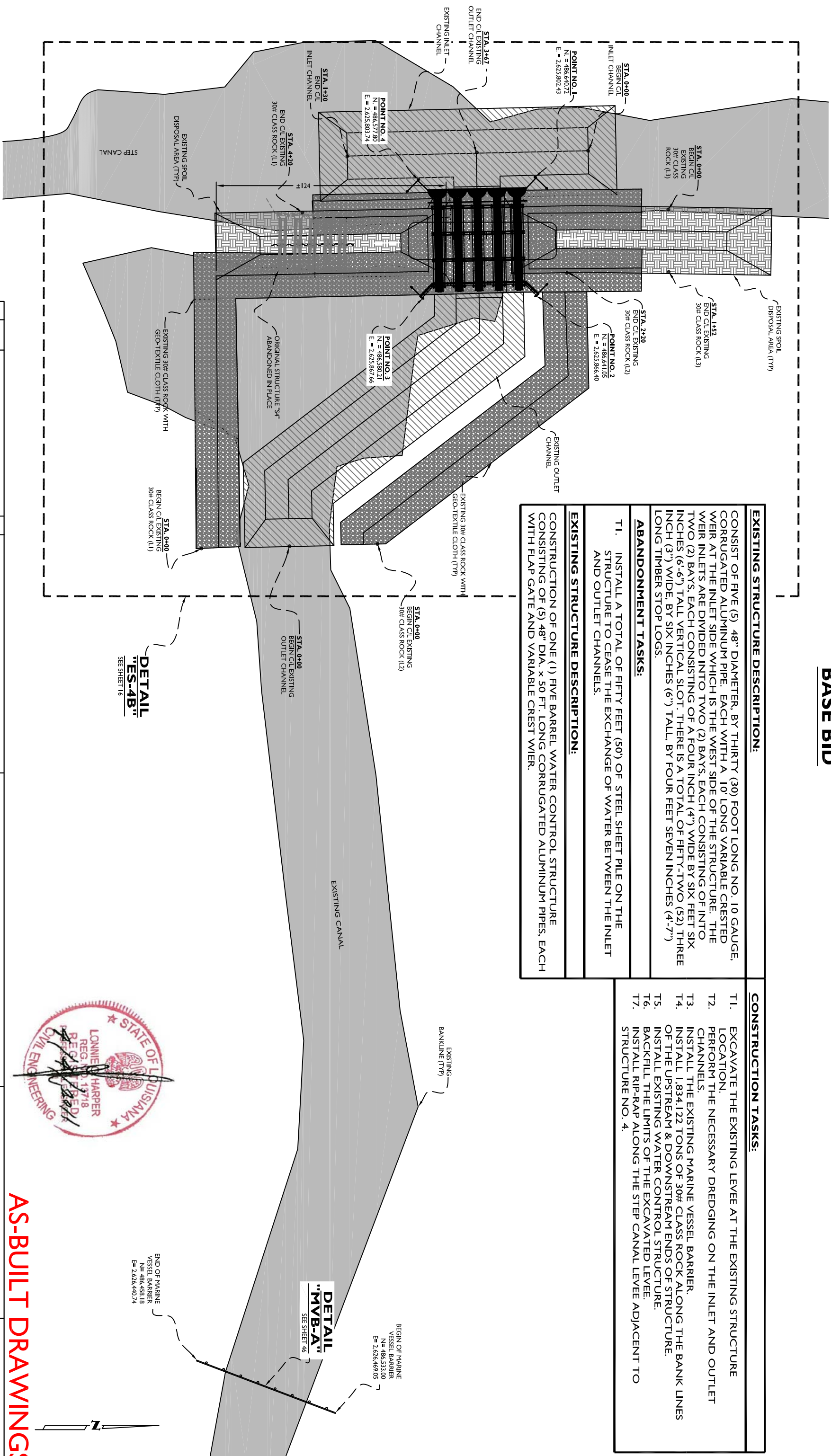
DATE: 02/09/2009

SHEET 14 OF 47

AS-BUILT DRAWINGS





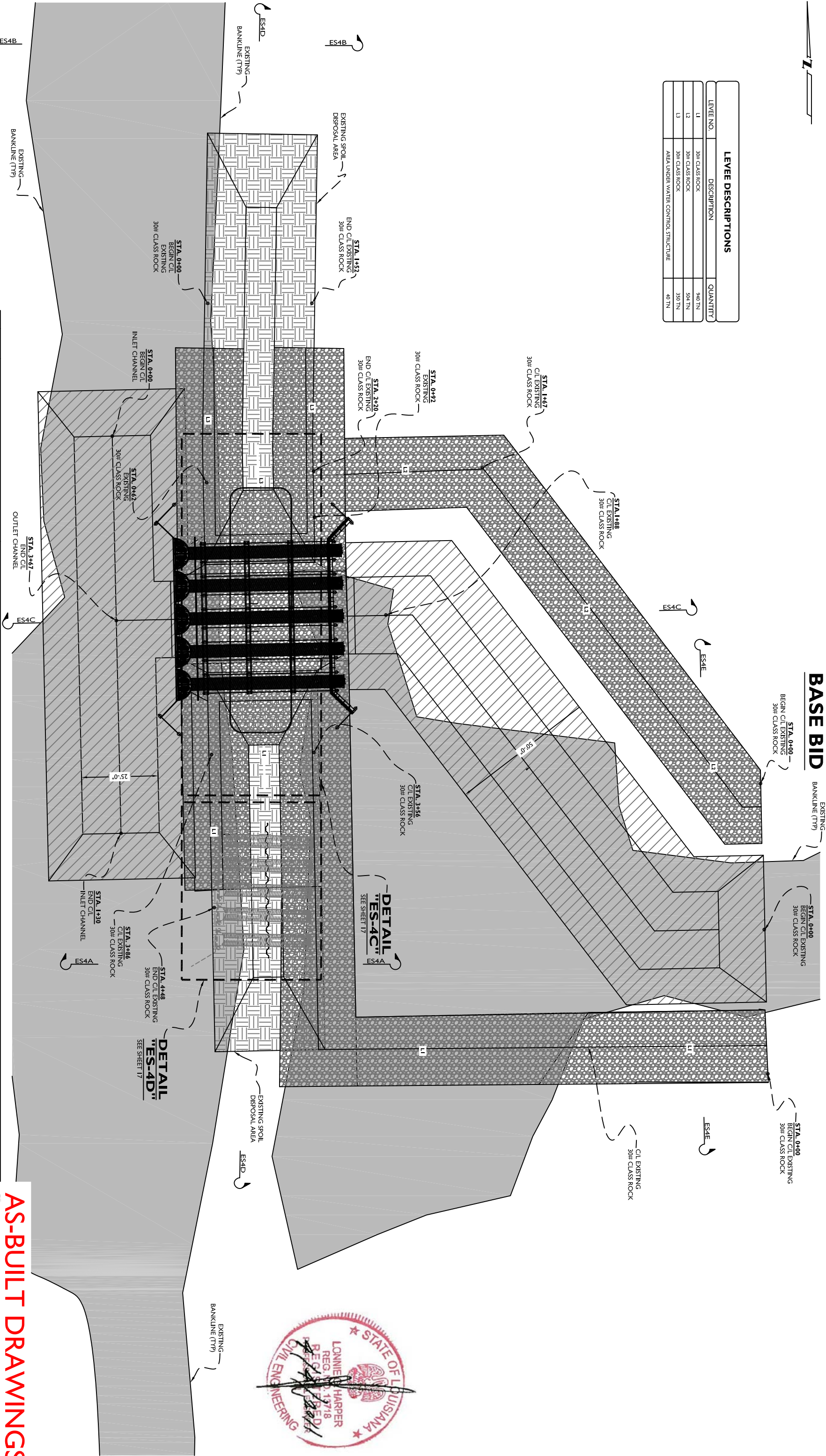
**BASE BID**

# AS-BUILT DRAWINGS

[illegible]



LEVEE DESCRIPTIONS		
LEVEE NO.	DESCRIPTION	QUANTITY
L1	30# CLASS ROCK	346 TN
L2	30# CLASS ROCK	504 TN
L3	30# CLASS ROCK	351 TN
	AREA UNDER WATER CONTROL STRUCTURE	40 TN



**BASE BID**

EXISTING  
BANKLINE (TYP)

STA 0+00  
BEGIN C/L EXISTING  
30# CLASS ROCK

STA 0+00  
BEGIN C/L EXISTING  
30# CLASS ROCK

STA 0+00  
BEGIN C/L EXISTING  
30# CLASS ROCK

ES4E

ES4E

ES4C

STA 1+88  
C/L EXISTING  
30# CLASS ROCK

STA 1+67  
C/L EXISTING  
30# CLASS ROCK

STA 0+92  
EXISTING  
30# CLASS ROCK

STA 2+20  
END C/L EXISTING  
30# CLASS ROCK

STA 2+66  
C/L EXISTING  
30# CLASS ROCK

DETAIL  
"ES-4C"  
ES4A  
SEE SHEET 17

ES4D

EXISTING SPOIL  
DISPOSAL AREA

EXISTING  
BANKLINE (TYP)

ES4D

EXISTING  
BANKLINE (TYP)

ES4B

STA 1+52  
END C/L EXISTING  
30# CLASS ROCK

STA 0+00  
BEGIN C/L  
EXISTING  
30# CLASS ROCK

STA 0+00  
BEGIN C/L  
INLET CHANNEL

STA 0+62  
EXISTING  
30# CLASS ROCK

STA 3+62  
END C/L  
OUTLET CHANNEL

ES4A

STA 1+30  
END C/L  
INLET CHANNEL

STA 2+86  
C/L EXISTING  
30# CLASS ROCK

STA 4+48  
END C/L EXISTING  
30# CLASS ROCK

DETAIL  
"ES-4D"  
SEE SHEET 17

ES4B

EXISTING  
BANKLINE (TYP)



**GENERAL NOTES:**

SEE SHEET 18 FOR SECTIONS "ES4A-ES4A"  
THRU "ES4E-ES4E".

REV.	DATE	DESCRIPTION	BY
2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	[signature]



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STATE OF LOUISIANA  
**OFFICE OF COASTAL PROTECTION  
AND RESTORATION**

450 LAUREL ST., SUITE 1501  
BATON ROUGE, LOUISIANA 70801

DRAWN BY: AARON HARPER

DESIGNED BY: LONNIE HARPER

MUD LAKE  
MAINTENANCE PROJECT

STATE PROJECT NUMBER: CS-20

FEDERAL PROJECT NUMBER:

APPROVED BY: LONNIE HARPER

STRUCTURE "ES-4"  
DETAIL "ES-4B"

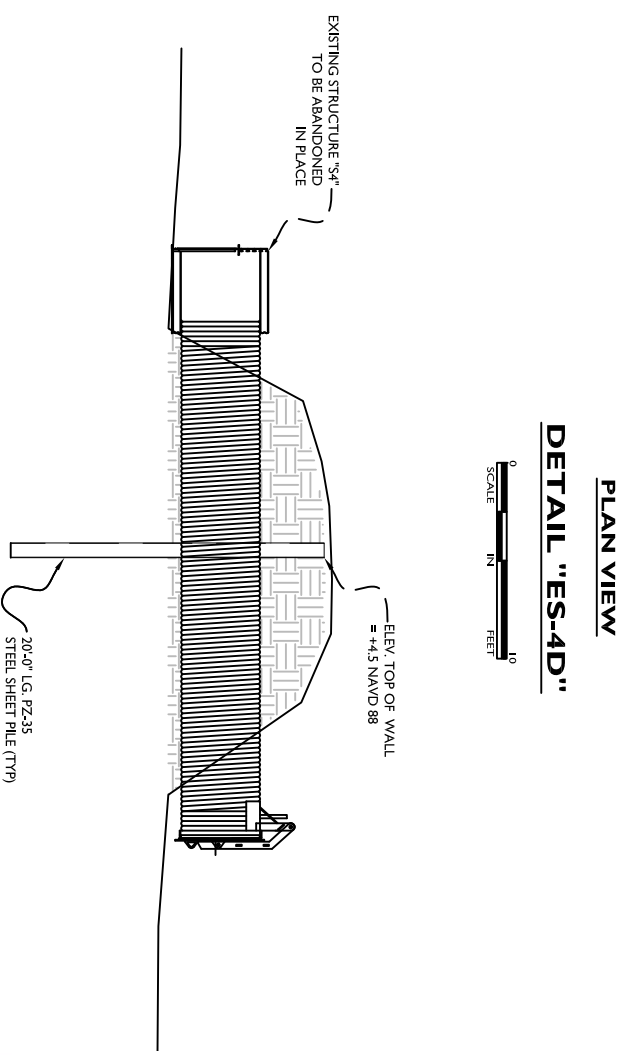
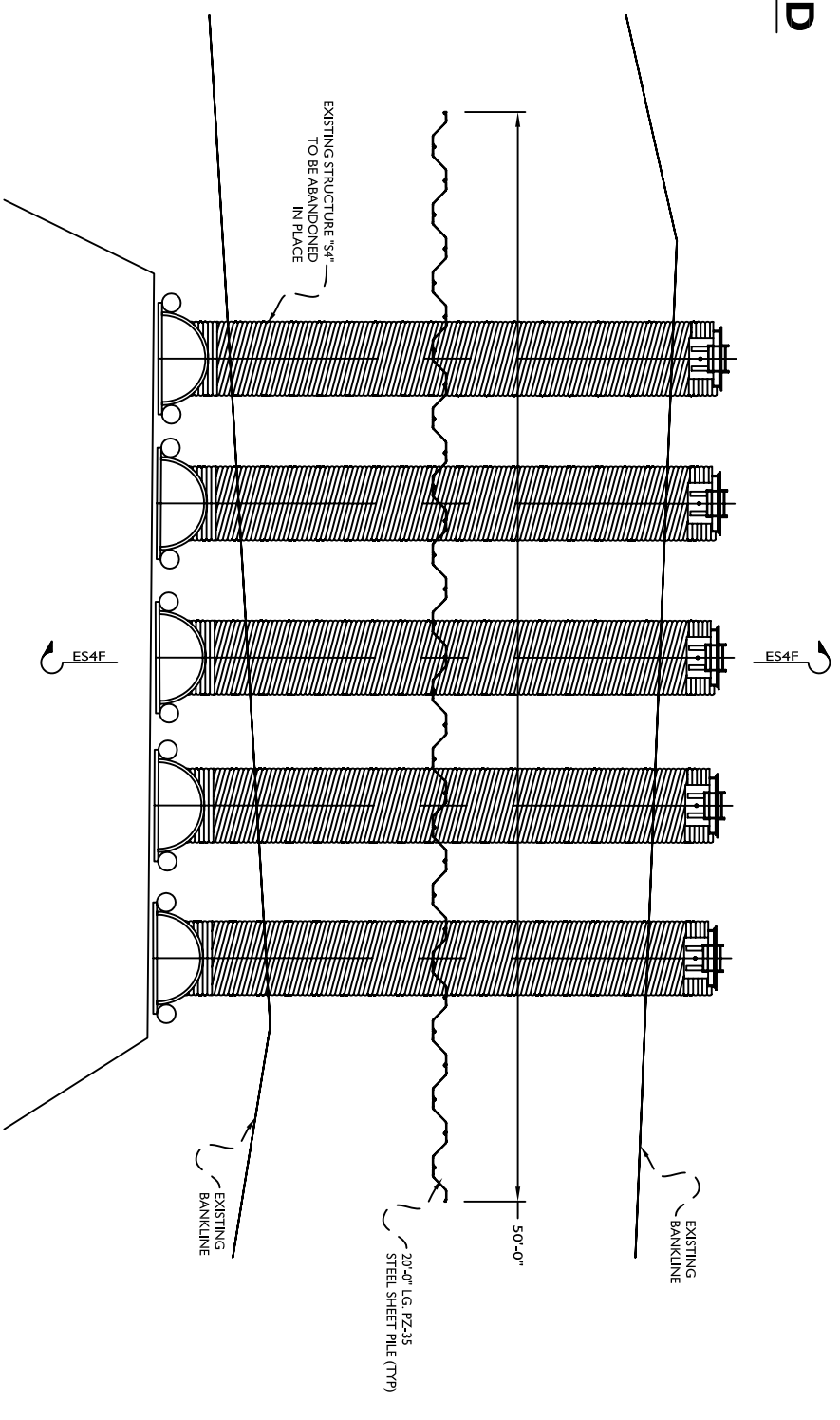
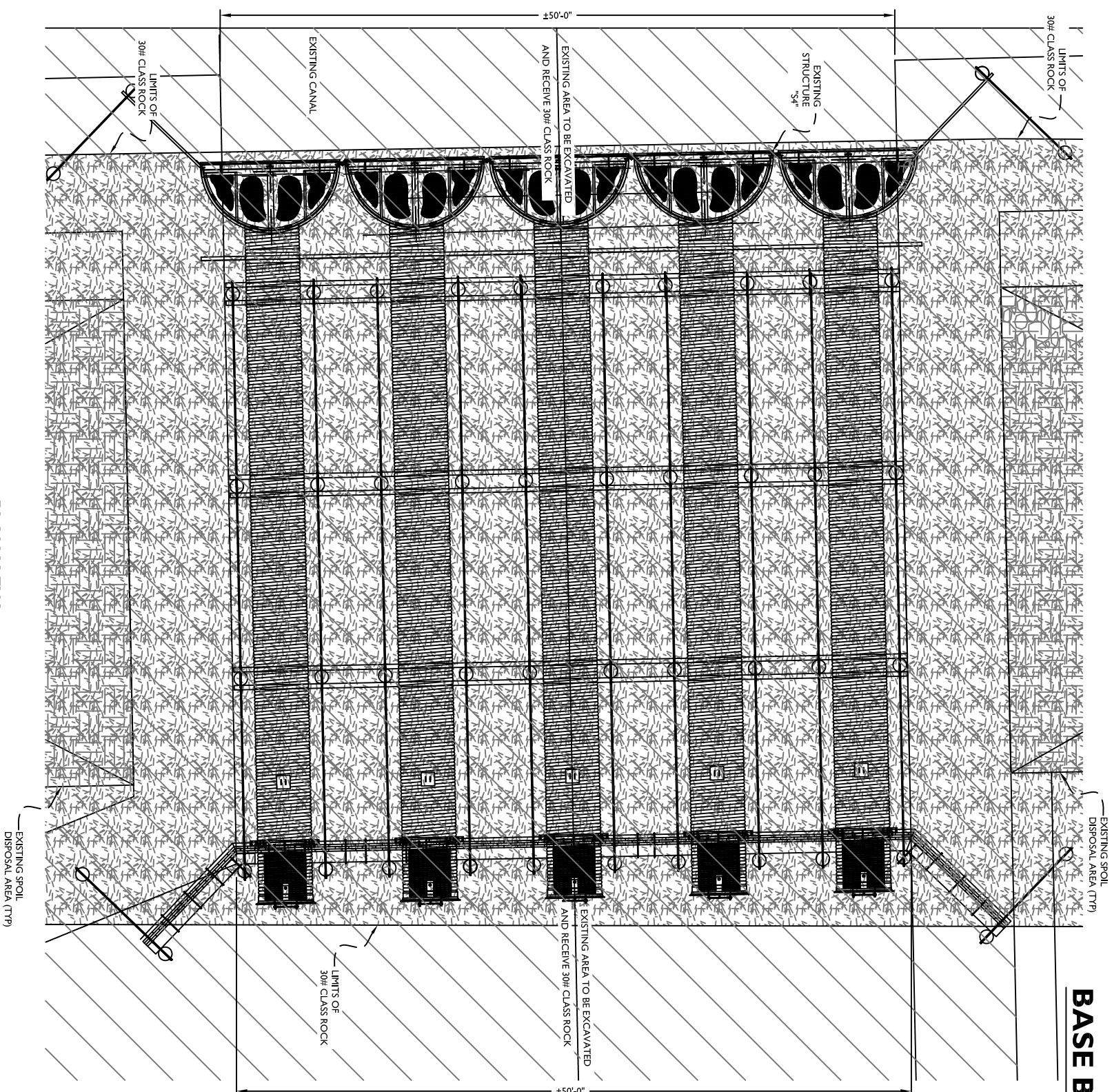
DATE: 02/09/2009

SHEET 16 OF 47


**AS-BUILT DRAWINGS**





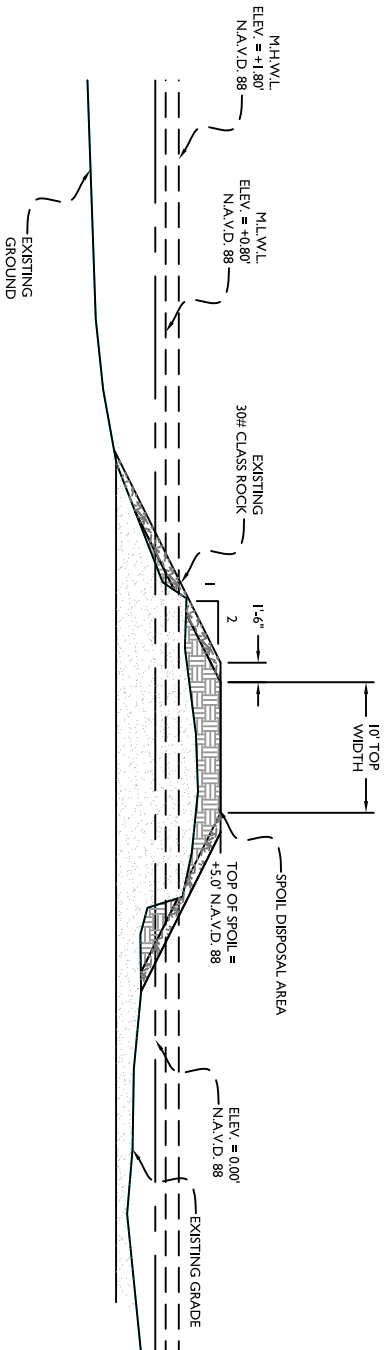
**BASE BID**

# AS-BUILT DRAWINGS

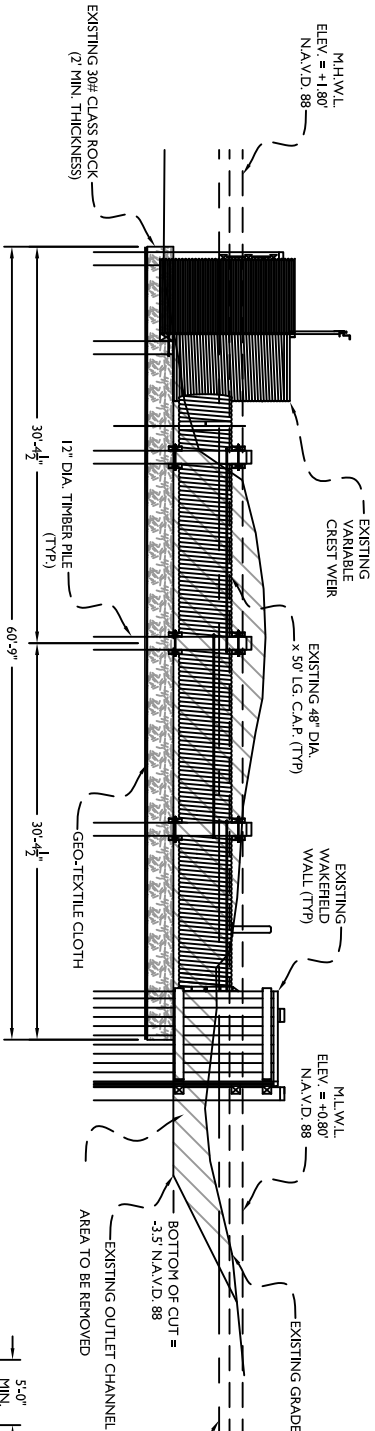
<b>GENERAL NOTES:</b>				
2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	CLW	
REV.	DATE	DESCRIPTION	BY	
<div><p>LONNIE G. HARPER and Associates, Inc. CIVIL ENGINEERING AND LAND SURVEYING 70630 2746 Hwy 384, Bell City, Louisiana PHONE: (337) 905-1079 FAX: (337) 905-1076</p></div>				
<div>STATE OF LOUISIANA <b>OFFICE OF COASTAL PROTECTION AND RESTORATION</b> 450 LAUREL ST., SUITE 1501 BATON ROUGE, LOUISIANA 70801</div>				<div>MUD LAKE MAINTENANCE PROJECT</div>
DRAWN BY: AARON HARPER				STATE PROJECT NUMBER: CS-20
DESIGNED BY: LONNIE HARPER				FEDERAL PROJECT NUMBER:
				APPROVED BY: LONNIE HARPER
				DATE: 02/09/2009
				SHEET 17 OF 47



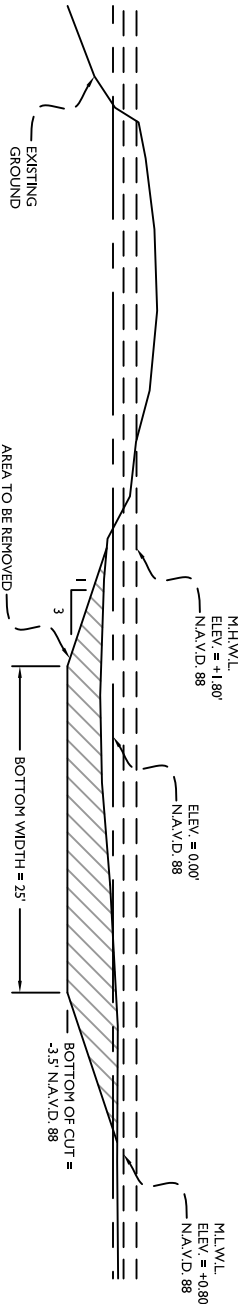
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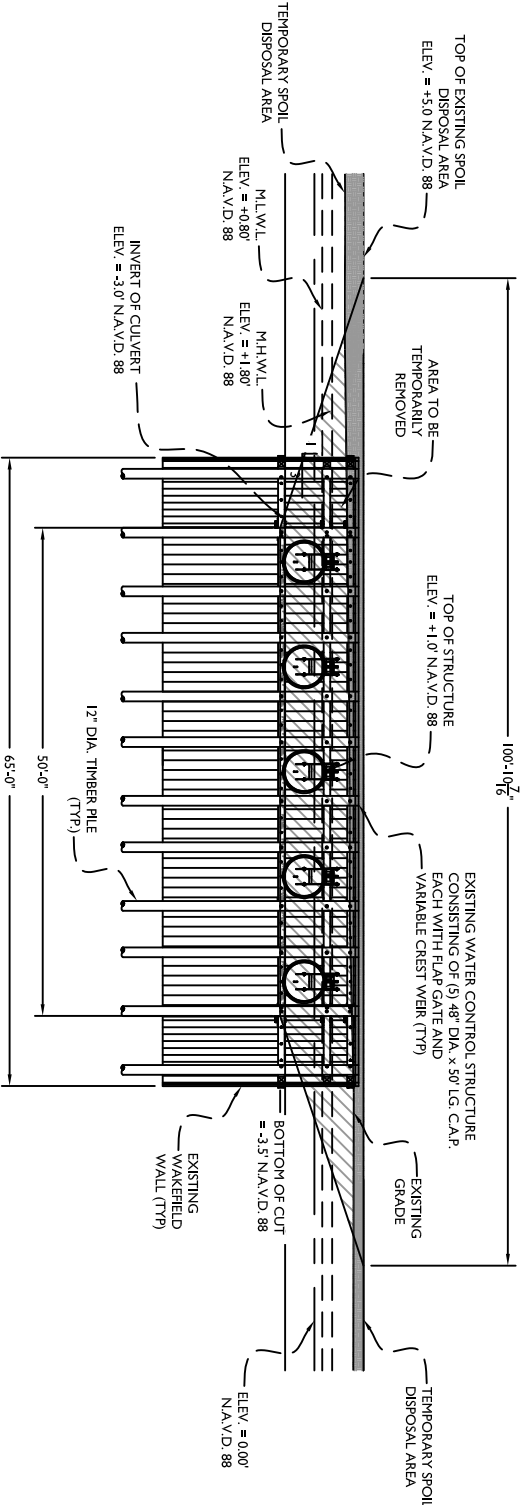
SECTION "ES4A-ES4A"



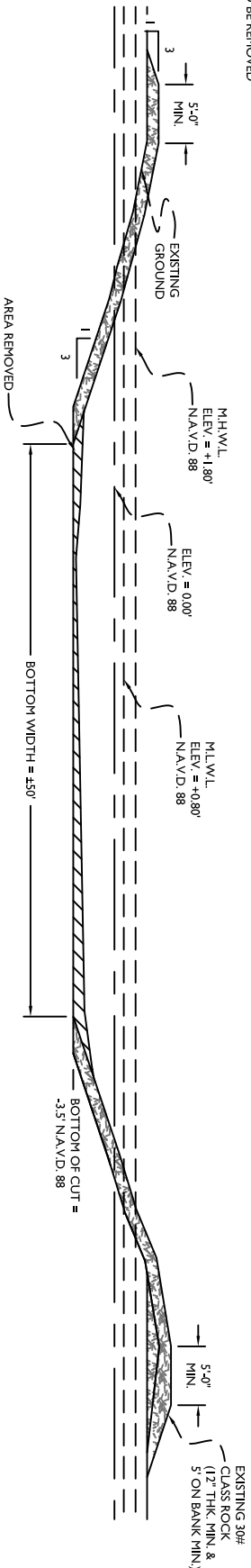
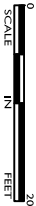
SECTION "ES4C-ES4C"



SECTION "ES4B-ES4B"



SECTION "ES4D-ES4D"



SECTION "ES4E-ES4E"



GENERAL NOTES:

1. THE CONTRACTOR SHALL EXCAVATE THE EXISTING OUTLET CHANNEL THRU THE LEVEE AT EXISTING STRUCTURE NO. 43 LOCATION TO -5.5' NAVD 88 THEN INSTALL GEO-TEXTILE CLOTH AND 2' THICK LAYER OF MAN SIZED RIP-RAP.

REV.	DATE	DESCRIPTION	BY
1	06/30/09	REVISED IN ACCORDANCE WITH DNR'S REVIEW	APH
2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	CLW



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STATE OF LOUISIANA  
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DRAWN BY: AARON HARPER

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MUD LAKE  
MAINTENANCE PROJECT

STATE PROJECT NUMBER: CS-20

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APPROVED BY: LONNIE HARPER

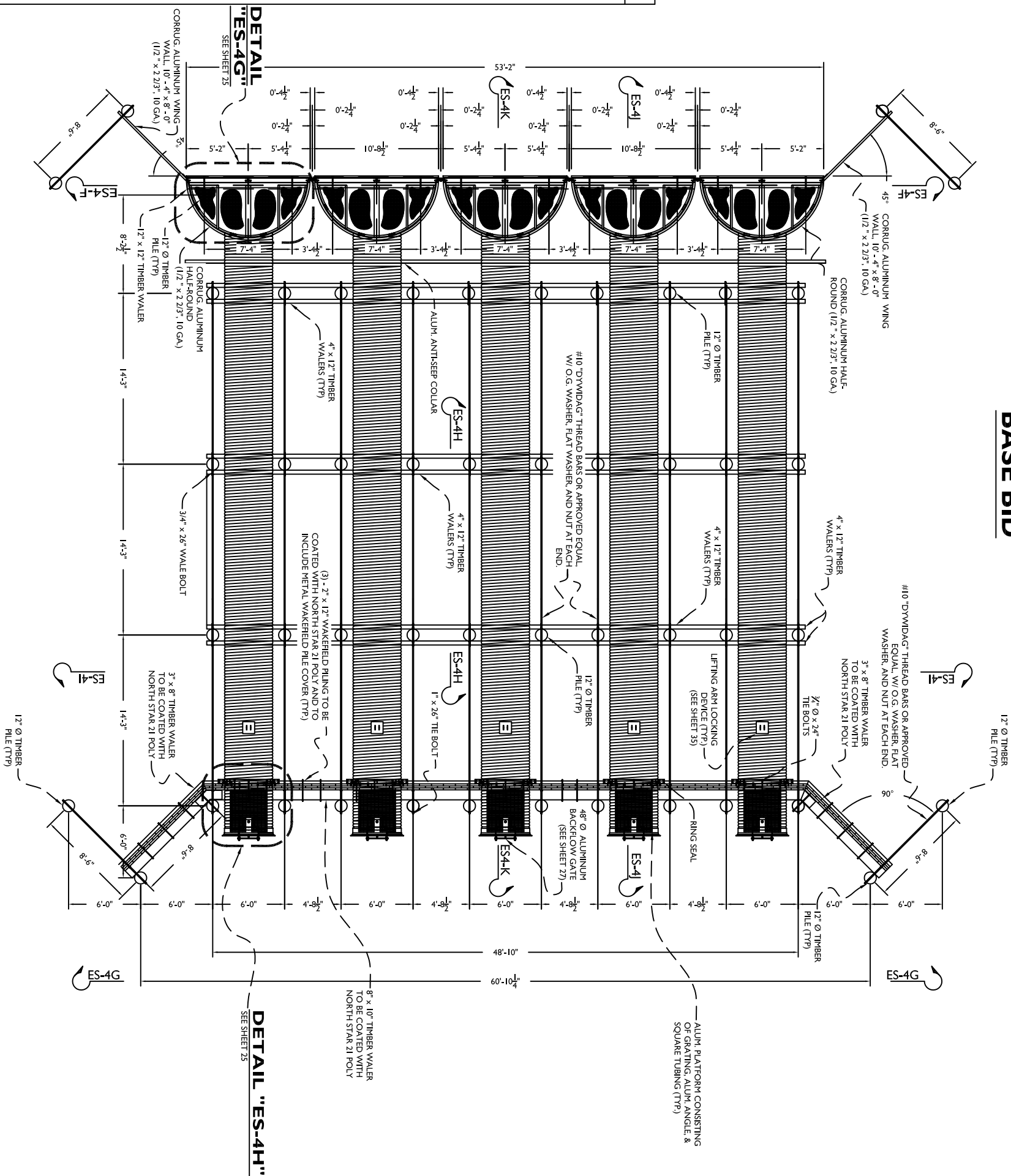
STRUCTURE "ES-4"  
SECTIONS

DATE: 02/09/2009

SHEET 18 OF 47

AS-BUILT DRAWINGS



**BASE BID**

**DETAIL "ES-4H"**

**NOTES:**

SEE SHEET 20 FOR PILE LAYOUT  
SECTION "ES-4F" SHOWN ON SHEET 21  
SECTION "ES-4G" SHOWN ON SHEET 22  
SECTION "ES-4H" SHOWN ON SHEET 23  
SECTION "ES-4I" SHOWN ON SHEET 24  
SECTION "ES-4J" SHOWN ON SHEET 25  
SECTION "ES-4K" SHOWN ON SHEET 25

# AS-BUILT DRAWINGS

[illegible]

**GENERAL NOTES:**

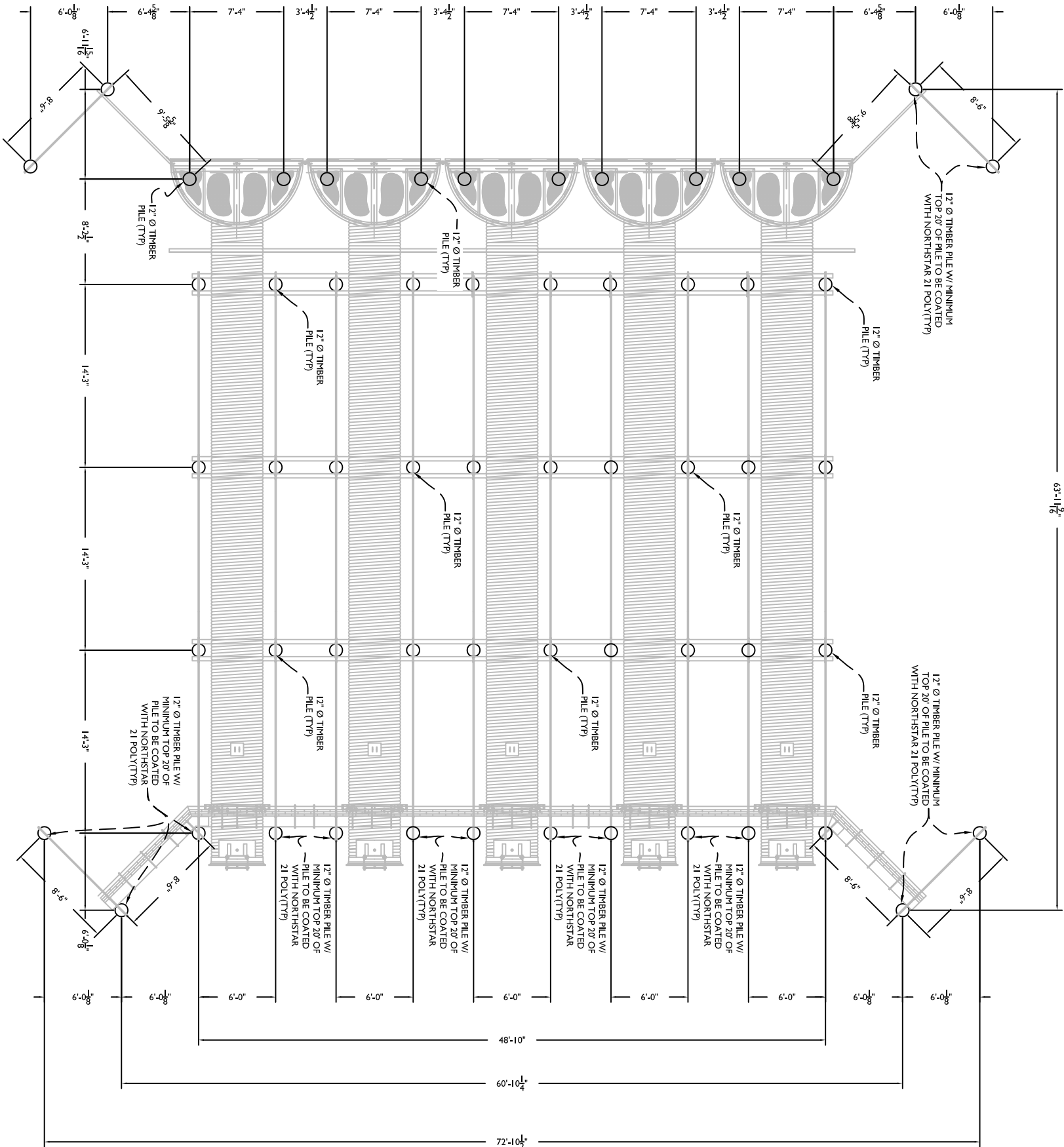
1. ALL ROUND PILES ARE TO BE 12" DIA. x 50' LG., SOUTHERN YELLOW PINE TIMBER PILES, UNLESS SPECIFIED OTHERWISE.
2. ALL SIZES SPECIFIED ARE NOMINAL SIZES FOR ROUGH TIMBER.
3. PILING & TIMBER SHALL BE PRESSURE TREATED WITH CHROMATE COPPER ARSENATE (CCA), UNLESS SPECIFIED OTHERWISE. (SEE "TIMBER & TIMBER PRESERVATION" SPECS. FOR DETAILS)
4. SPUCE BOLTS SHALL USE O.G. WASHERS ON EACH END AND LOCK WASHERS AT EACH NUT LOCATION.
5. ALL METAL HARDWARE (NAILS, BOLTS, NUTS, PLATES, AND WASHERS) ASSOCIATED WITH ALUMINUM FABRICATION SHALL BE STAINLESS STEEL IN ACCORDANCE WITH "WATER CONTROL STRUCTURE" SPECS., UNLESS SPECIFIED OTHERWISE.
6. ALL METAL HARDWARE (NAILS, BOLTS, NUTS, DWYDAG BARS AND WASHERS) ASSOCIATED WITH TIMBER FABRICATION AND INSTALLATION SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH "TREATED AND UNTREATED TIMBER" SPECS., UNLESS SPECIFIED OTHERWISE.

7. ALL UNUSED BORE HOLES AND SPIKE HOLES SHALL BE POURED FULL OF PRESERVATIVE AND PLUGGED WITH TIGHT TREATED PLUGS.
8. CONTRACTOR MUST SUBMIT ALL SPlicing DETAILS, NOT SHOWN ON THE PLANS, TO THE ENGINEER FOR HIS APPROVAL PRIOR TO THE START OF CONSTRUCTION. ALL SPlice PLATES SHALL BE CONSTRUCTED OUT OF 1/2" THICK STEEL PLATE AND WITH A MINIMUM OF FOUR (4) - 3/4"Ø GALVANIZED BOLTS.
9. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND NOTIFYING ALL UTILITY COMPANIES WITHIN CONSTRUCTION LIMITS AT LEAST 3 DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
10. EXPOSED END GRAIN OF SHEET AND ROUND PILES SHALL BE TREATED AND COVERED WITH A METAL COVER AS DETAILED ON SHEET 30 OF THE DRAWINGS.

11. ALL MEASUREMENTS ASSOCIATED WITH THE EXISTING STRUCTURE TO BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO FABRICATION.
11. ALL ELEVATIONS ARE EXPRESSED IN FEET AND REFERENCED TO THE NAVD 88 VERTICAL DATUM UNLESS OTHERWISE SPECIFIED.



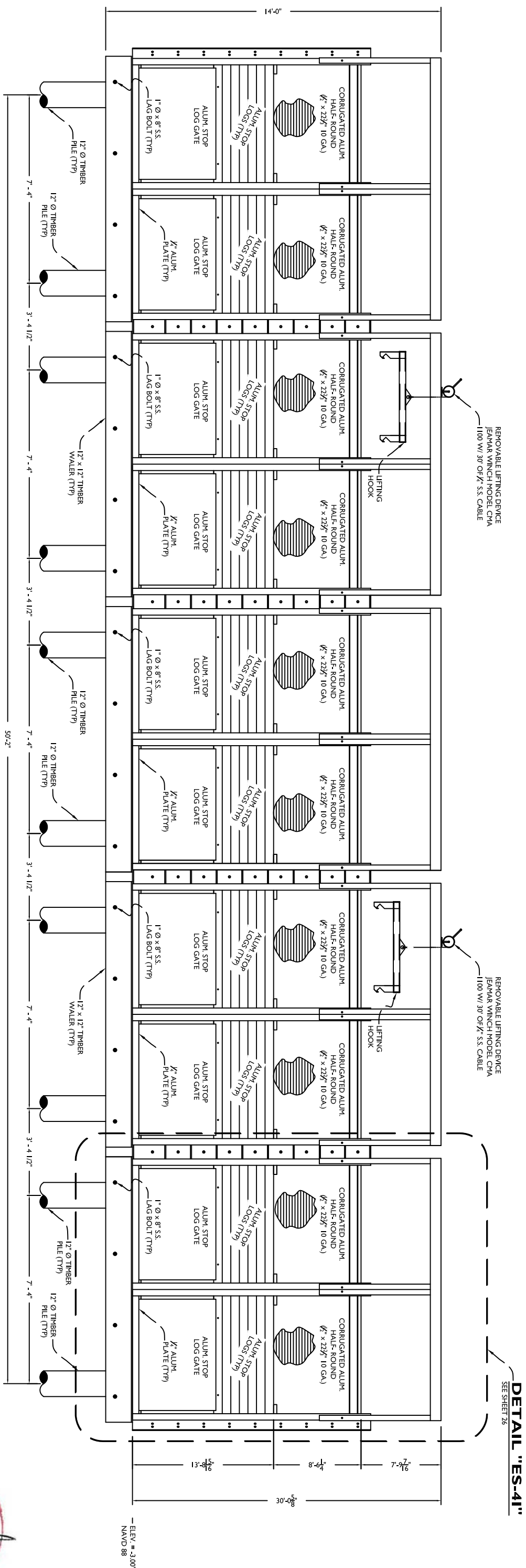
BASE BID



AS-BUILT DRAWINGS

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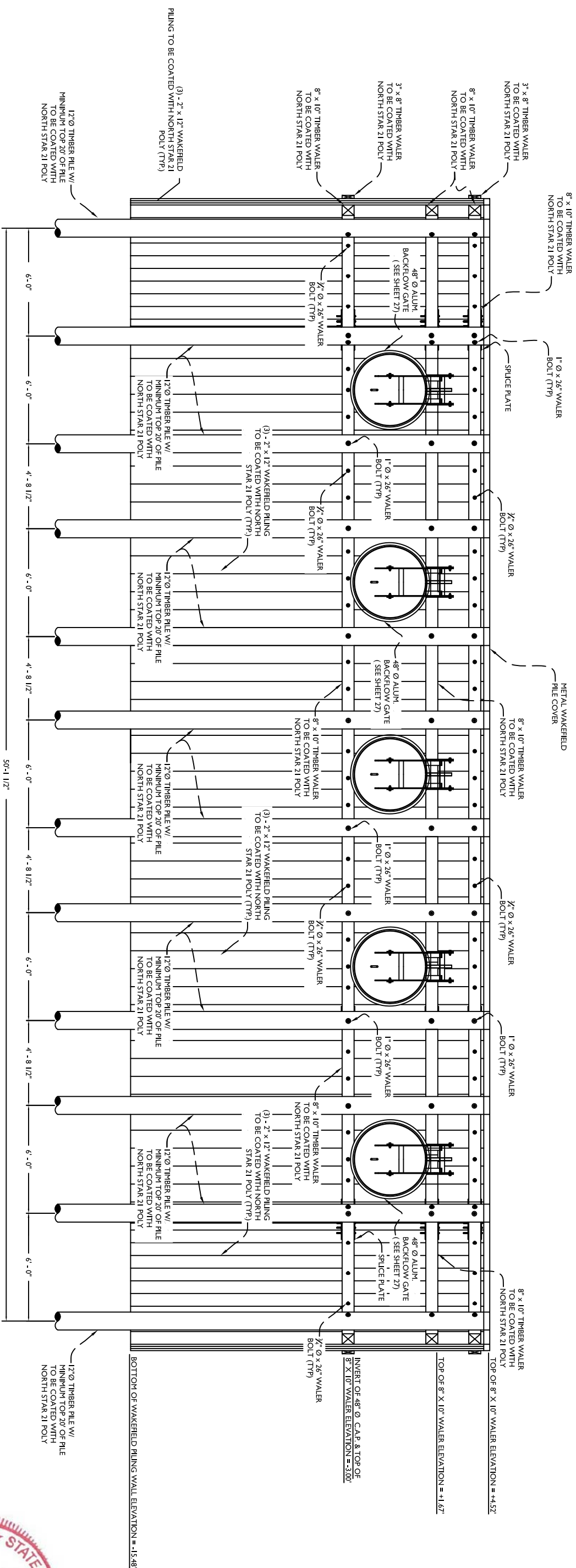


**BASE BID**

# AS-BUILT DRAWINGS

[illegible]

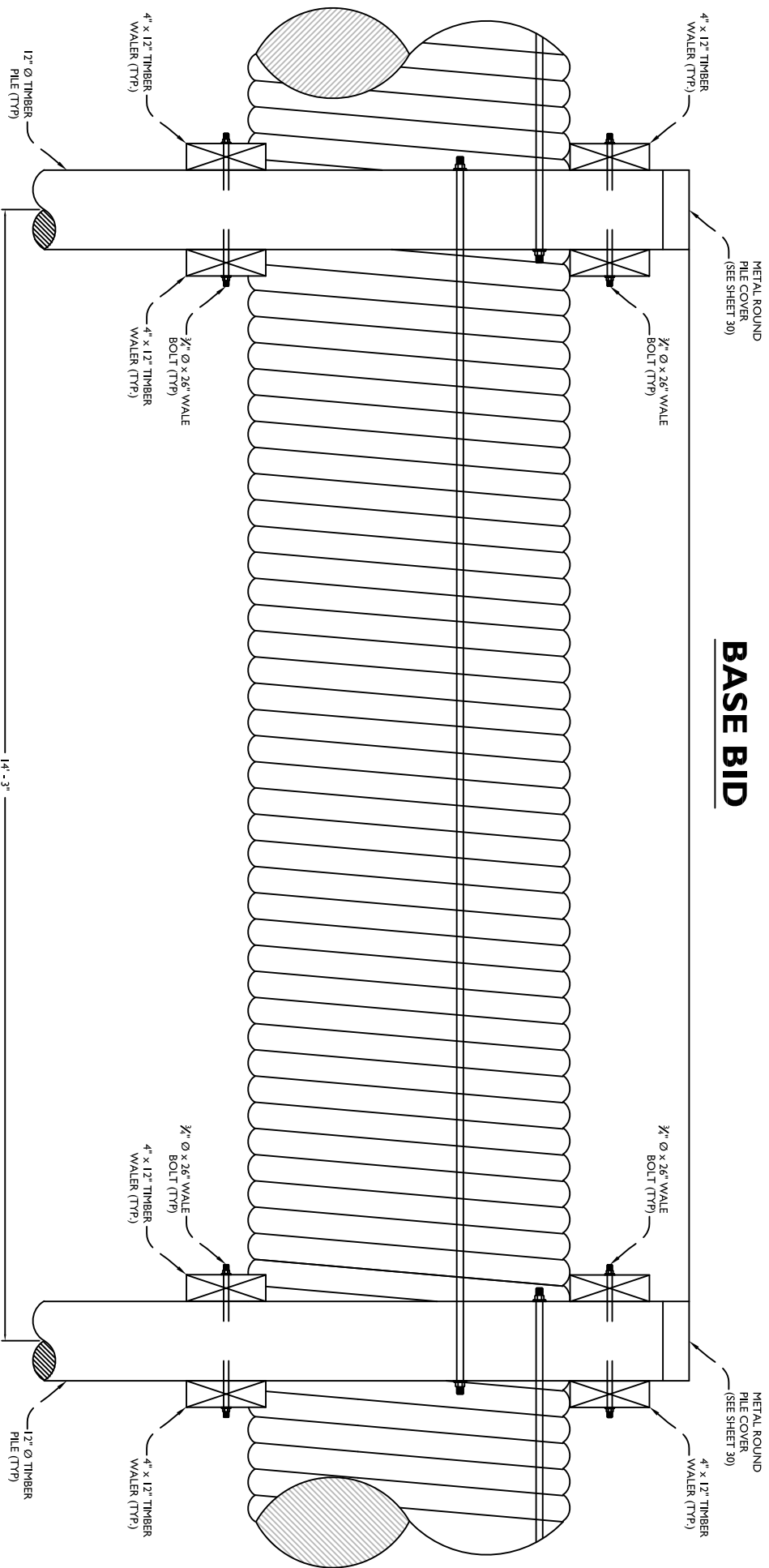


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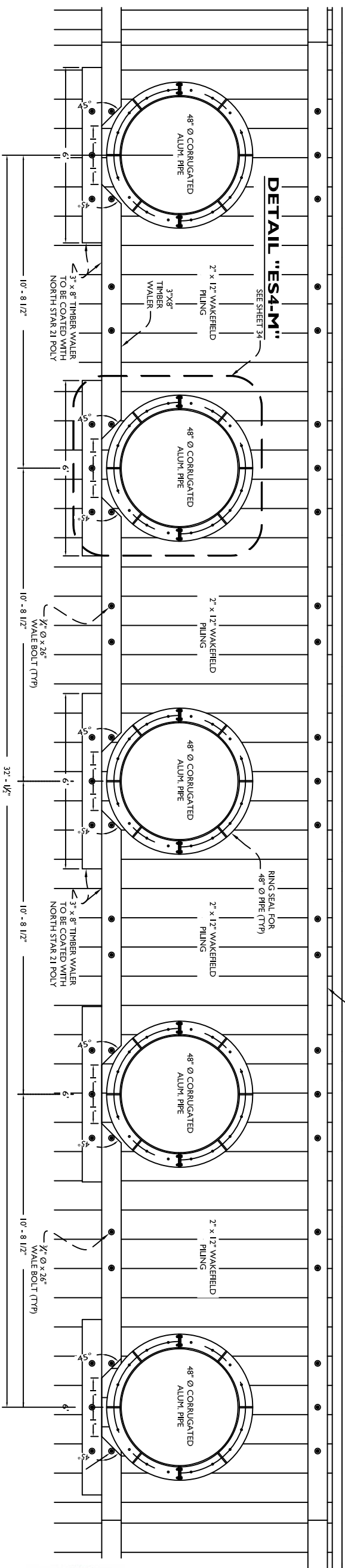
**BASE BID**

**SECTION "ES4H - ES4H"**



(3) - 2" x 12" WAKEFIELD PILING  
TO BE COATED WITH NORTH  
STAR 21 POLY AND TO INCLUDE  
METAL WAKEFIELD PILE COVER (TYP.)

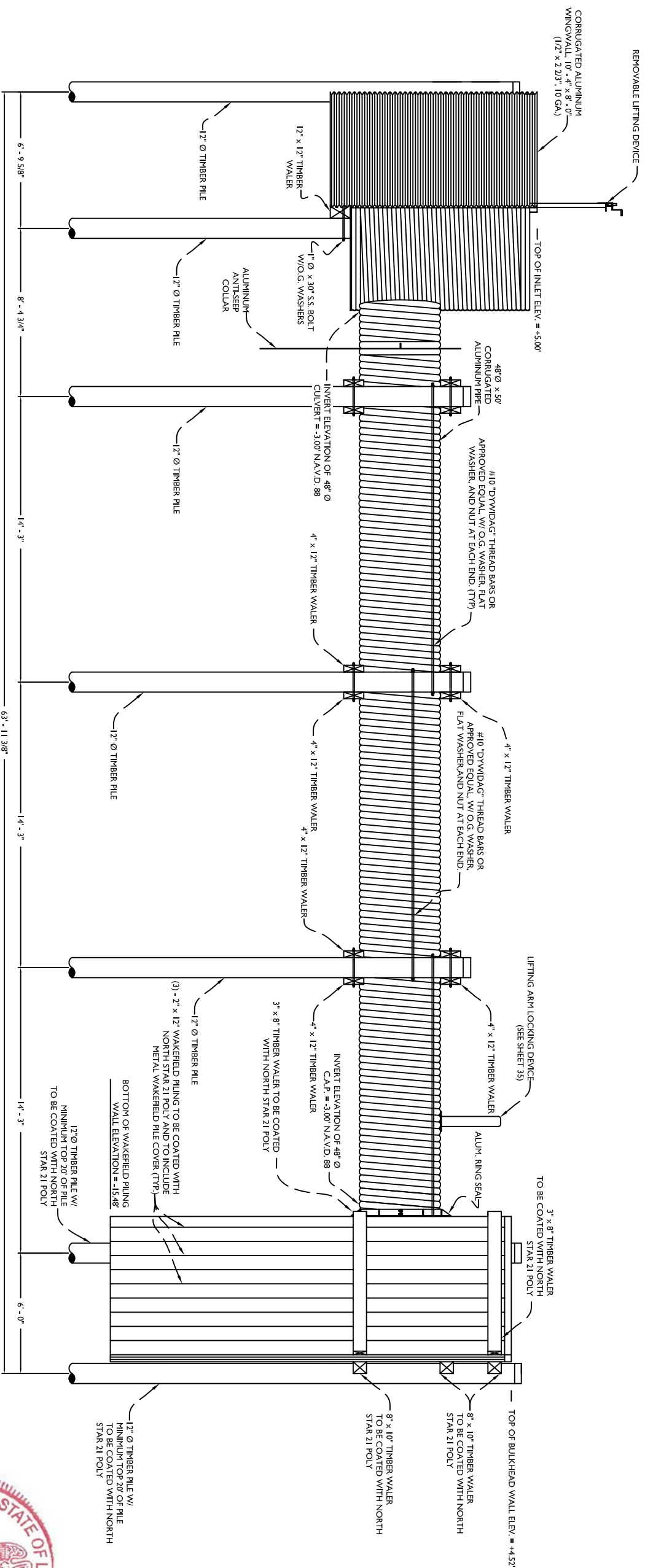
## DETAIL "ES4-M"



# AS-BUILT DRAWINGS

[illegible]



**BASE BID**

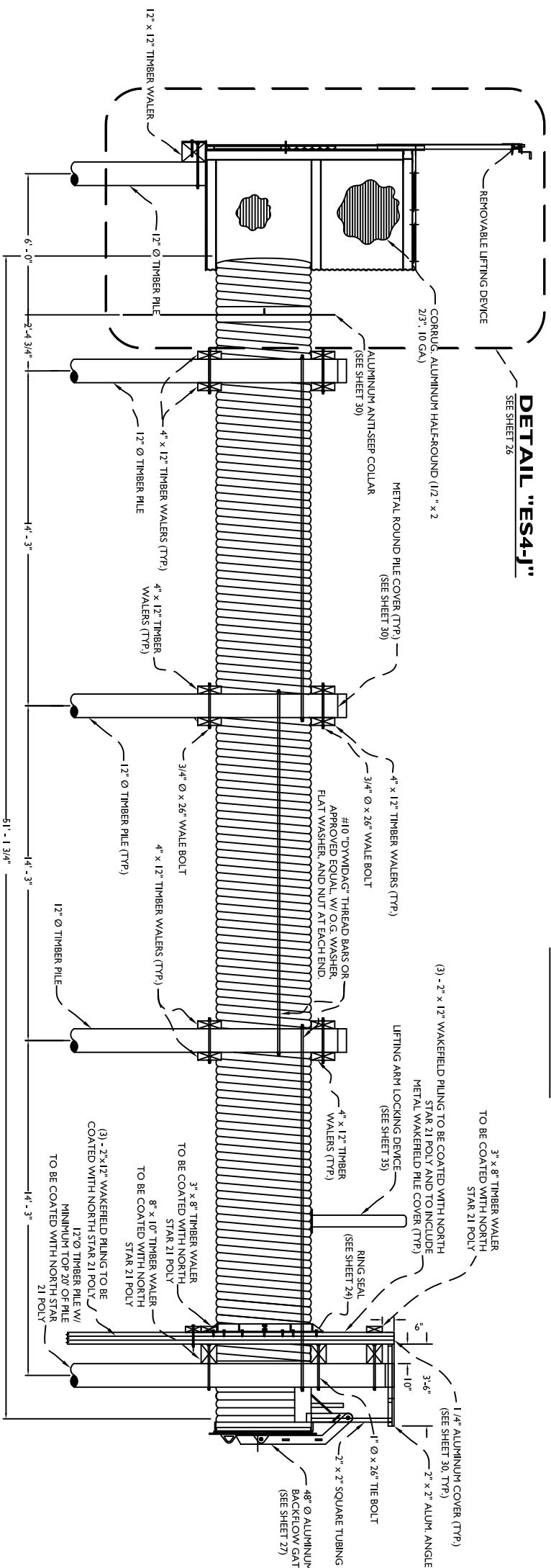
# AS-BUILT DRAWINGS

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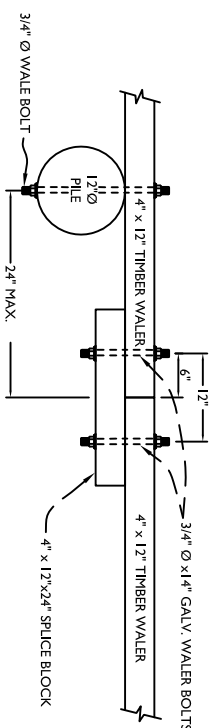


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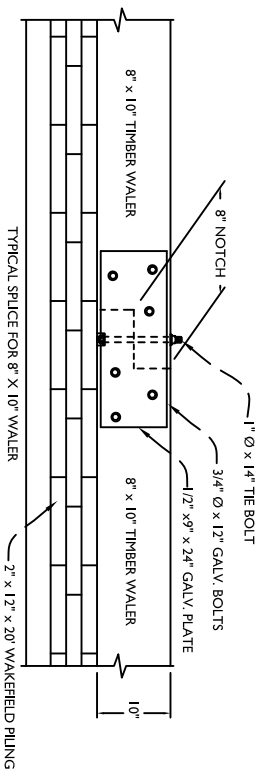
### DETAIL "ES4-j"



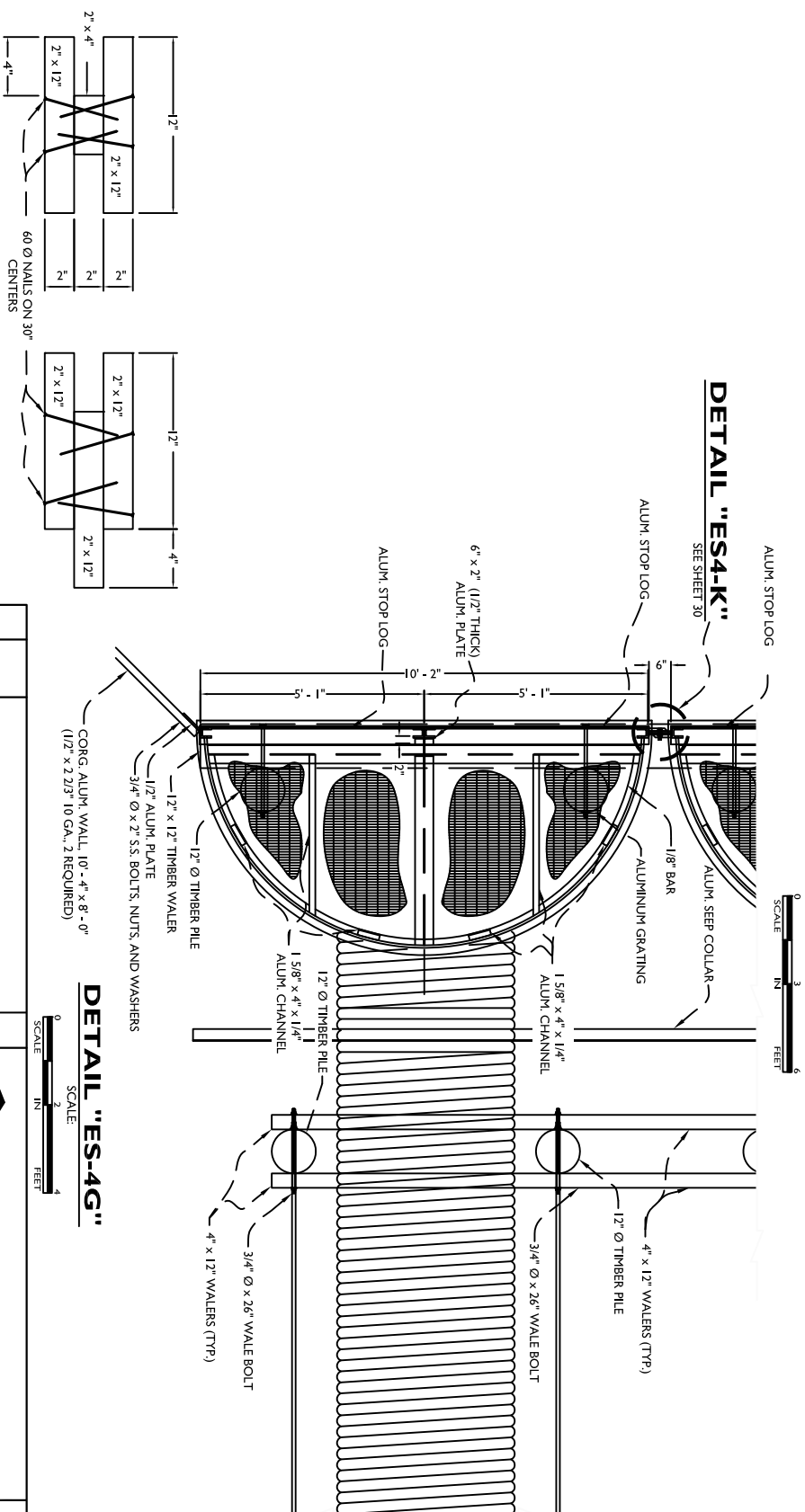
### TYPICAL SPLICE FOR 4" x 12" WALKER



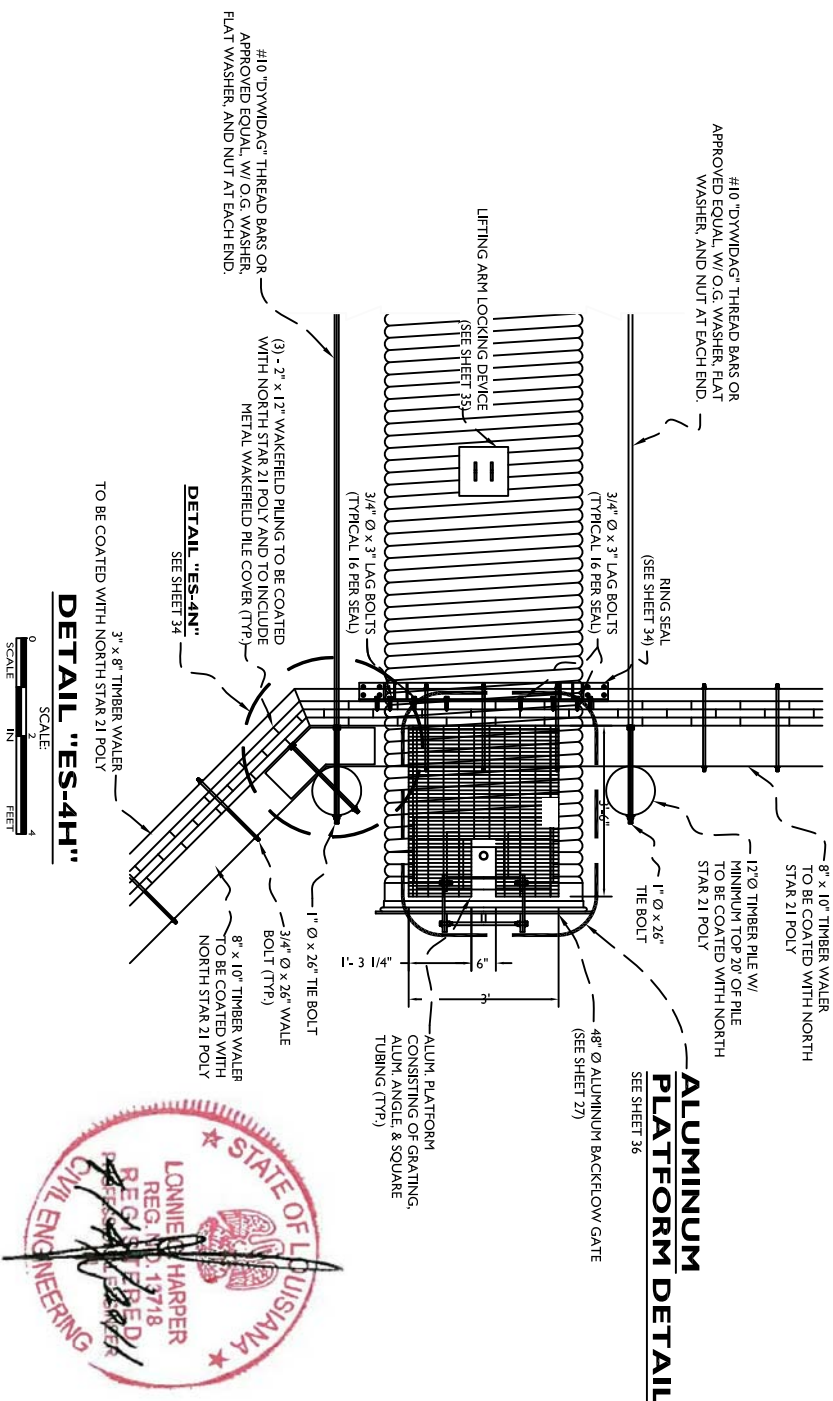
## WALER SPLICE DETAILS




## SECTION "ES4K - ES4K"



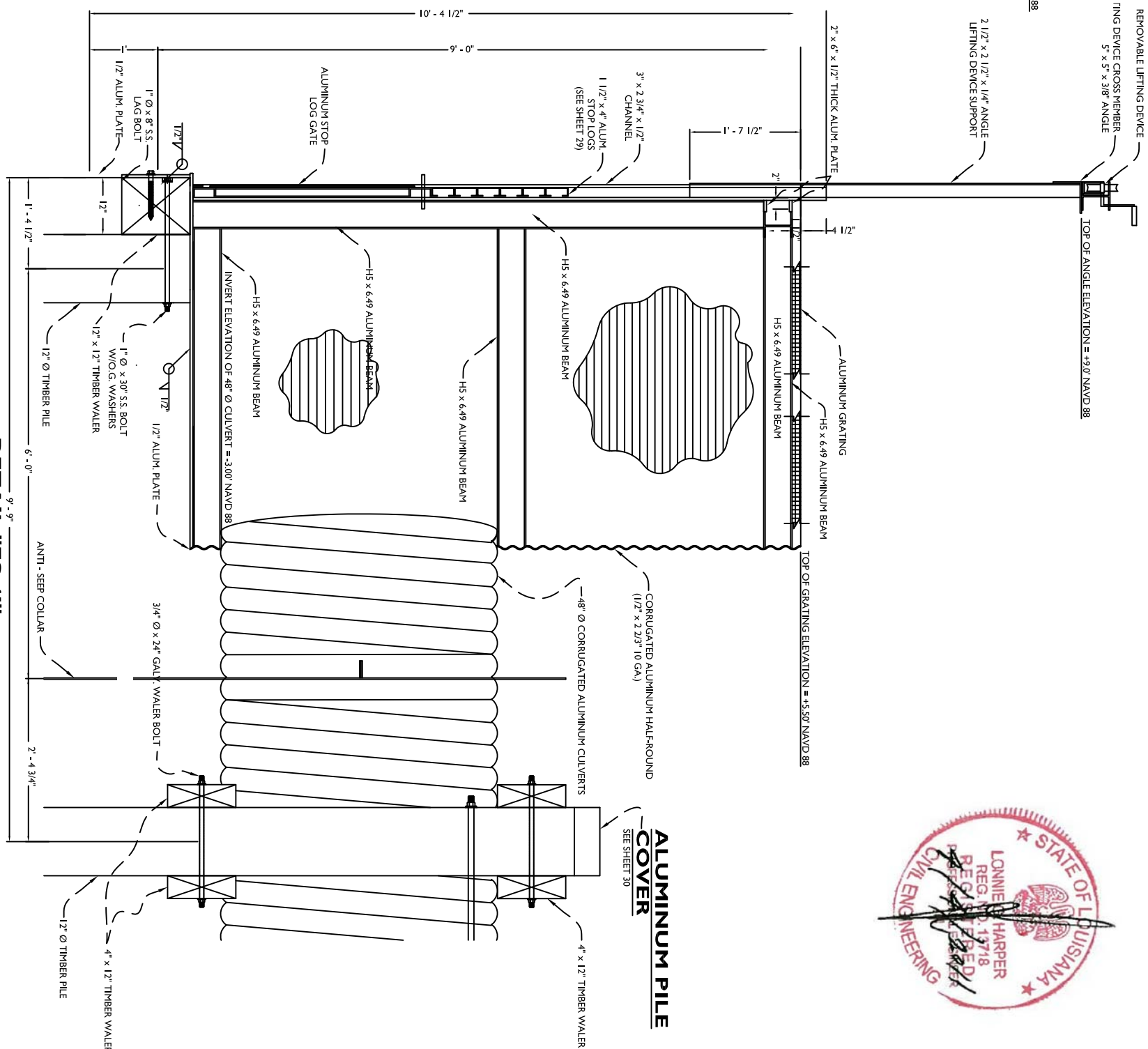
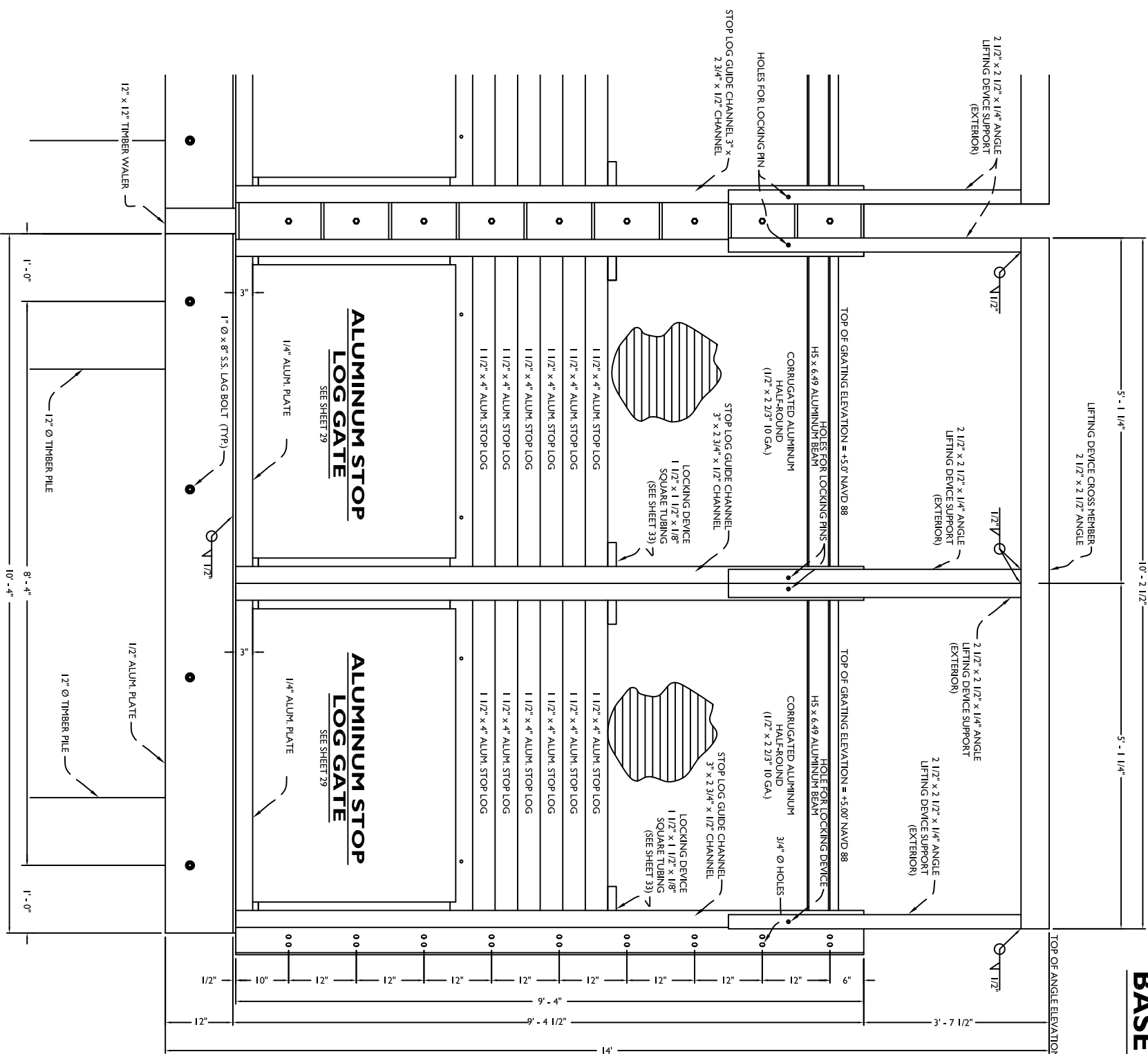
## ALUMINUM PLATFORM DETAIL




# AS-BUILT DRAWINGS

4" = 60' 0" STAINS ON JOINTS CENTERS		SIDE PILING	
CENTER PILING ONLY			
<b>WAKEFIELD PILING SPLICE DETAILS</b>			
SCALE 0' 2' 4' N.T.S. SCALE IN FEET			
2	06/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	CLW
REV.	DATE	DESCRIPTION	BY
			
LONNIE G. HARPER and Associates, Inc. CIVIL ENGINEERING AND LAND SURVEYING 2746 Hwy 384, Bell City, Louisiana 70630 PHONE: (337) 905-1079 FAX: (337) 905-1076			
STATE OF LOUISIANA OFFICE OF COASTAL PROTECTION AND RESTORATION 450 LAUREL ST., SUITE 1501 BATON ROUGE, LOUISIANA 70801		MUD LAKE MAINTENANCE PROJECT	
DRAWN BY: AARON HARPER		STATE PROJECT NUMBER: CS-20	
DESIGNED BY: LONNIE HARPER		FEDERAL PROJECT NUMBER:	
		APPROVED BY: LONNIE HARPER	
		STRUCTURE "ES-4" DETAILS AND SECTIONS	
		DATE: 02/09/2009	
		SHEET 25 OF 47	

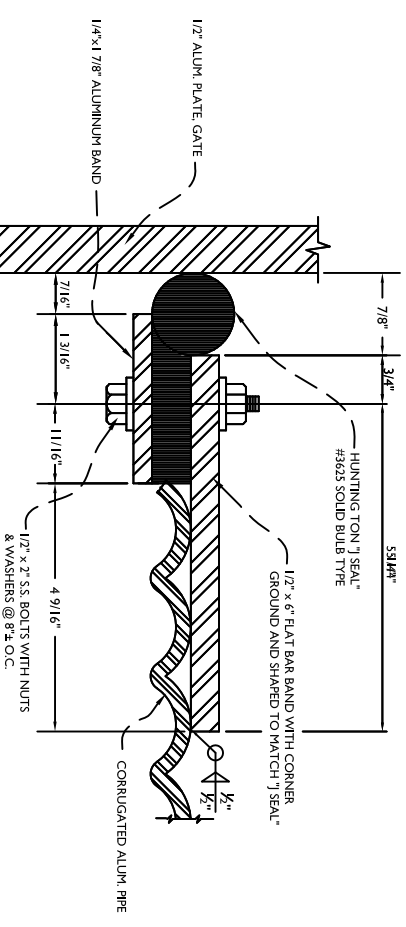
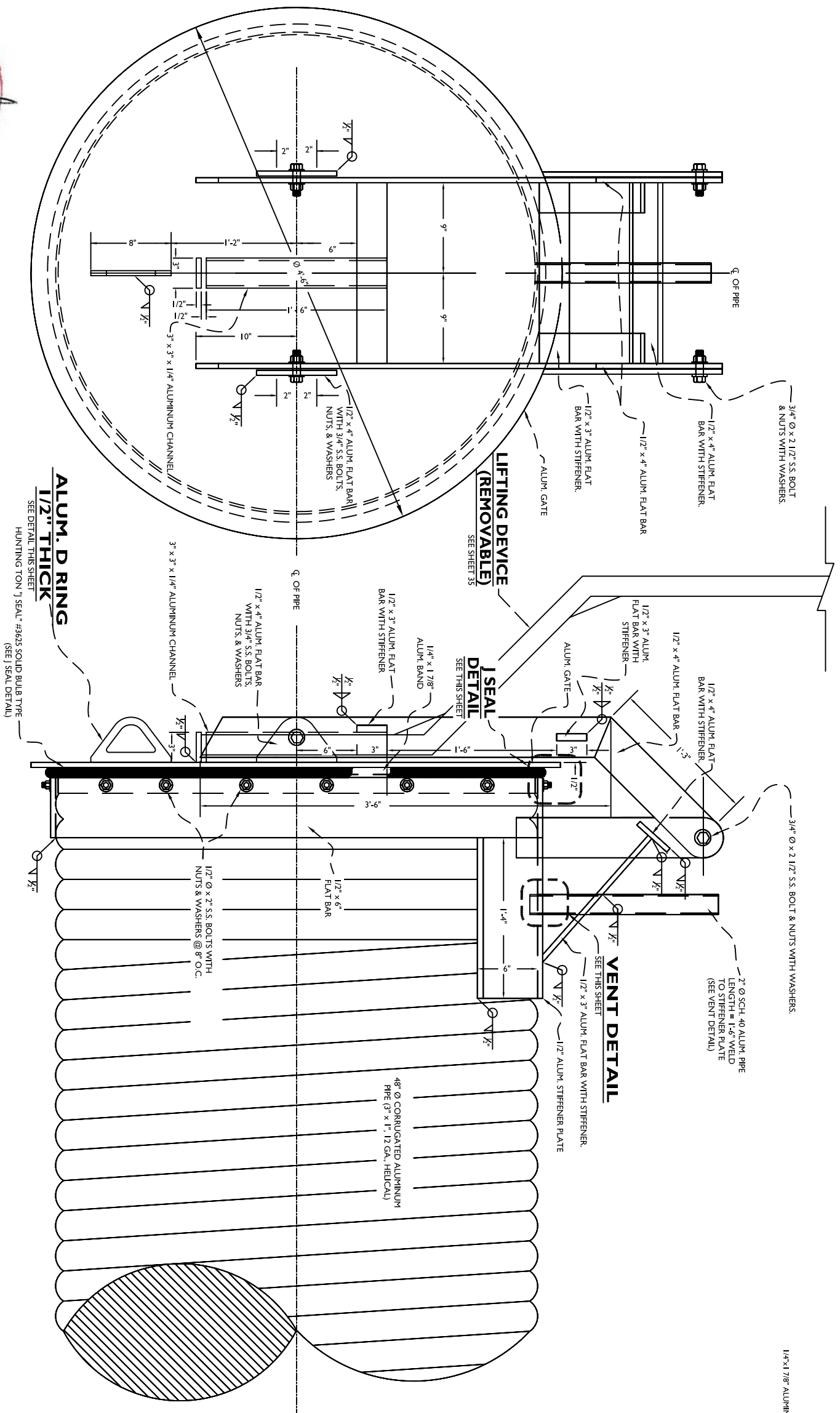




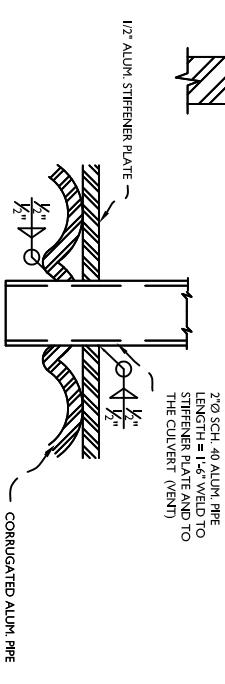
# AS-BUILT DRAWINGS

<b>NOTES:</b>							
1) FOR CLARIFICATION OF STOP LOG BAY, SEE ISOMETRIC DETAIL ON SHEET 28.							
2) FOR CLARIFICATION OF STOP LOG ASSEMBLY, SEE ISOMETRIC DETAIL ON SHEET 29.							
REV.	DATE	DESCRIPTION		BY			
2	04/04/11	REVISED ACCORDING TO ASBUILT CONDITIONS		CLW			
 <p> <b>LONNIE G. HARPPER</b>  and Associates, Inc.  CIVIL ENGINEERING  AND LAND SURVEYING  2746 Hwy 384, Ball City, Louisiana 70630  PHONE: (337) 905-1079 FAX: (337) 905-1076 </p>				<p>STATE OF LOUISIANA</p> <p><b>OFFICE OF COASTAL PROTECTION</b></p> <p><b>AND RESTORATION</b></p> <p>450 LAUREL ST., SUITE 1501  BATON ROUGE, LOUISIANA 70801</p>			
DRAWN BY: AARON HARPER		DESIGNED BY: LONNIE HARPER		MUD LAKE MAINTENANCE PROJECT		STRUCTURE "ES-4" DETAILS	
				STATE PROJECT NUMBER: CS-20			
				FEDERAL PROJECT NUMBER:		DATE: 02/09/2009	
				APPROVED BY: LONNIE HARPER		SHEET 26 OF 47	

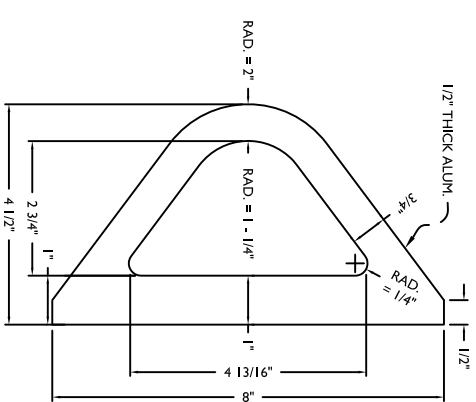
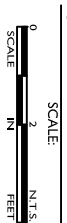


**BASE BID**

## J SEAL DETAIL



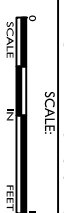
## VENT DETAIL



## D R I N G D E T A I L



## ALUMINUM BACKFLOW GATE DETAILS



REV.	DATE	DESCRIPTION	BY
2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	CLW



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AND LAND SURVEYING

2746 Hwy 384, Bell City, Louisiana 70630  
PHONE: (337) 905-1079 FAX: (337) 905-1076

STATE OF LOUISIANA  
OFFICE OF COASTAL PROTECTION  
AND RESTORATION  
450 LAUREL ST., SUITE 1501  
BATON ROUGE, LOUISIANA 70801

---

DRAWN BY: AARON HARPER

DESIGNED BY: LONNIE HARPER
----------------------------

MUD LAKE MAINTENANCE PROJECT	
STATE PROJECT NUMBER:	CS-20
FEDERAL PROJECT NUMBER:	
APPROVED BY: LONNIE HARPER	

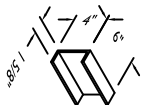
STRUCTURE "ES-4"  
BACKFLOW GATE DETAILS

DATE: 02/09/2009
SHEET 27 OF 47

OF 47

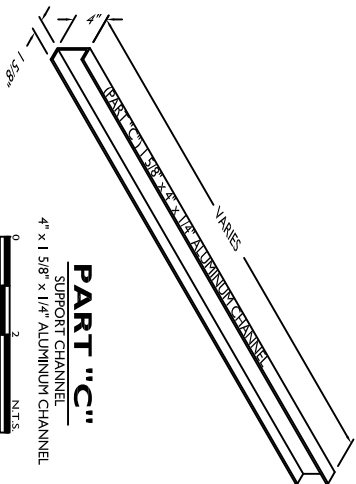
# AS-BUILT DRAWINGS





**PART "B"**

GRATING SUPPORT CLIP  
6" x 4" x 1 5/8" ALUMINUM CHANNEL



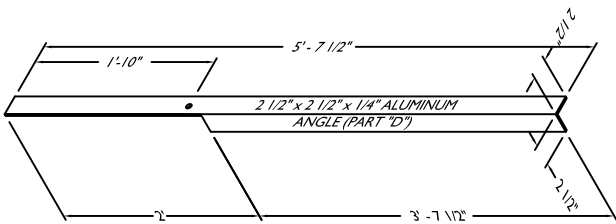
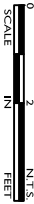
**PART "C"**

SUPPORT CHANNEL  
4" x 1 5/8" x 1/4" ALUMINUM CHANNEL



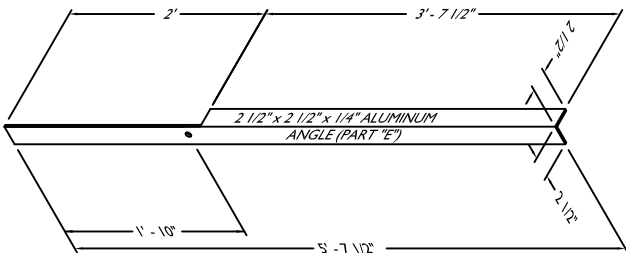
**PART "A"**

STOP LOG GUIDE CHANNEL  
3" x 2 3/4" x 1/2" ALUMINUM CHANNEL



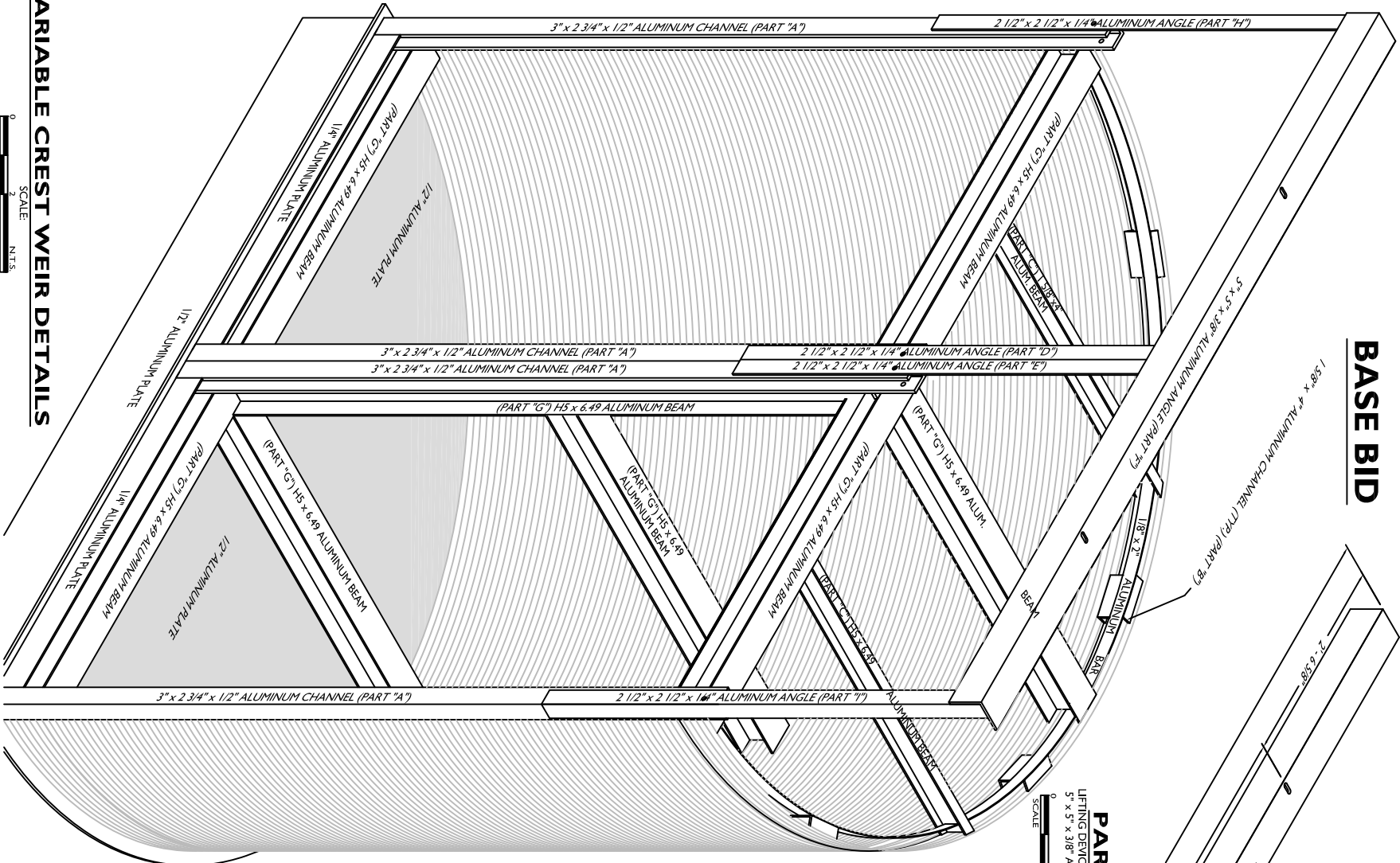
**PART "D"**

LIFTING DEVICE SUPPORT (INTERIOR)  
2 1/2" x 2 1/2" x 1/4" ALUMINUM ANGLE

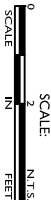


**PART "E"**

LIFTING DEVICE SUPPORT (INTERIOR)  
2 1/2" x 2 1/2" x 1/4" ALUMINUM ANGLE



**VARIABLE CREST WEIR DETAILS**



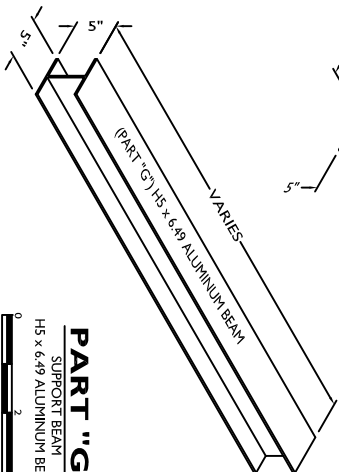
**BASE BID**

ITEM	DESCRIPTION	NO. PER VAR. CREST, WEIR	TOTAL REQUIRED FOR CONTRACT	LOCATION OF DETAIL
PART "A"	STOP LOG GUIDE CHANNEL	4	56	SHEET 31
PART "B"	GRATING SUPPORT CLIP	4	56	SHEET 31
PART "C"	SUPPORT CHANNEL	2	28	SHEET 31
PART "D"	LIFTING DEVICE SUPPORT	1	14	SHEET 31
PART "E"	LIFTING DEVICE SUPPORT	1	14	SHEET 31
PART "F"	LIFTING DEVICE CROSS MEMBER	6	84	SHEET 31
PART "G"	SUPPORT BEAM	1	14	SHEET 31
PART "H"	LIFTING DEVICE SUPPORT	1	14	SHEET 31
PART "I"	STOP LOG GATE	2	28	SHEET 33
PART "K"	ALUMINUM STOP LOG	32	448	SHEET 32
PART "L"	LOCKING PIN	2	56	SHEET 29
PART "M"	LOCKING DEVICE	2	42	SHEET 33



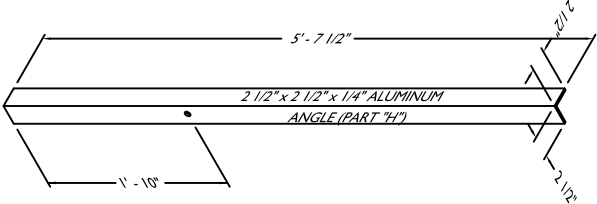
**PART "F"**

LIFTING DEVICE CROSS MEMBER  
5" x 5" x 3/8" ALUMINUM ANGLE



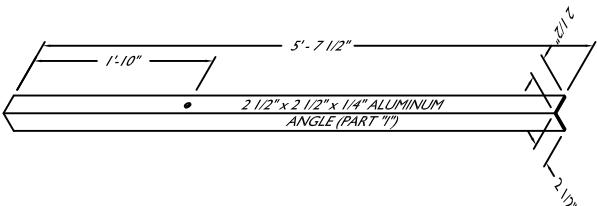
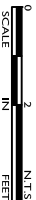
**PART "G"**

SUPPORT BEAM  
H5 x 6x9 ALUMINUM BEAM



**PART "H"**

LIFTING DEVICE SUPPORT (EXTERIOR)  
2 1/2" x 2 1/2" x 1/4" ALUMINUM ANGLE




**PART "I"**

LIFTING DEVICE SUPPORT (EXTERIOR)  
2 1/2" x 2 1/2" x 1/4" ALUMINUM ANGLE



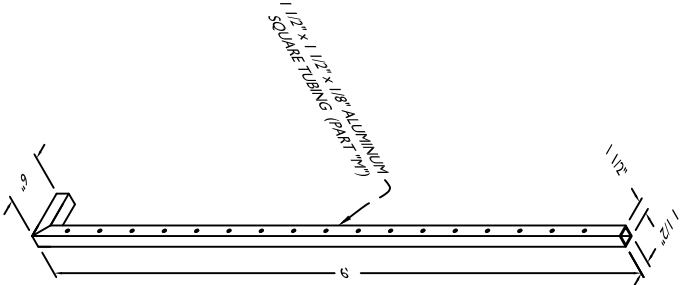
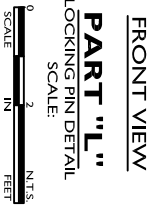
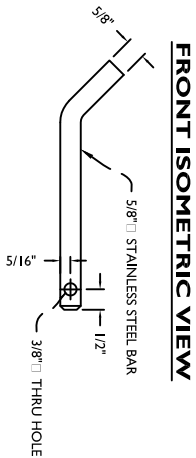
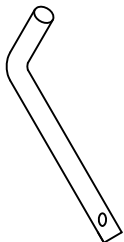
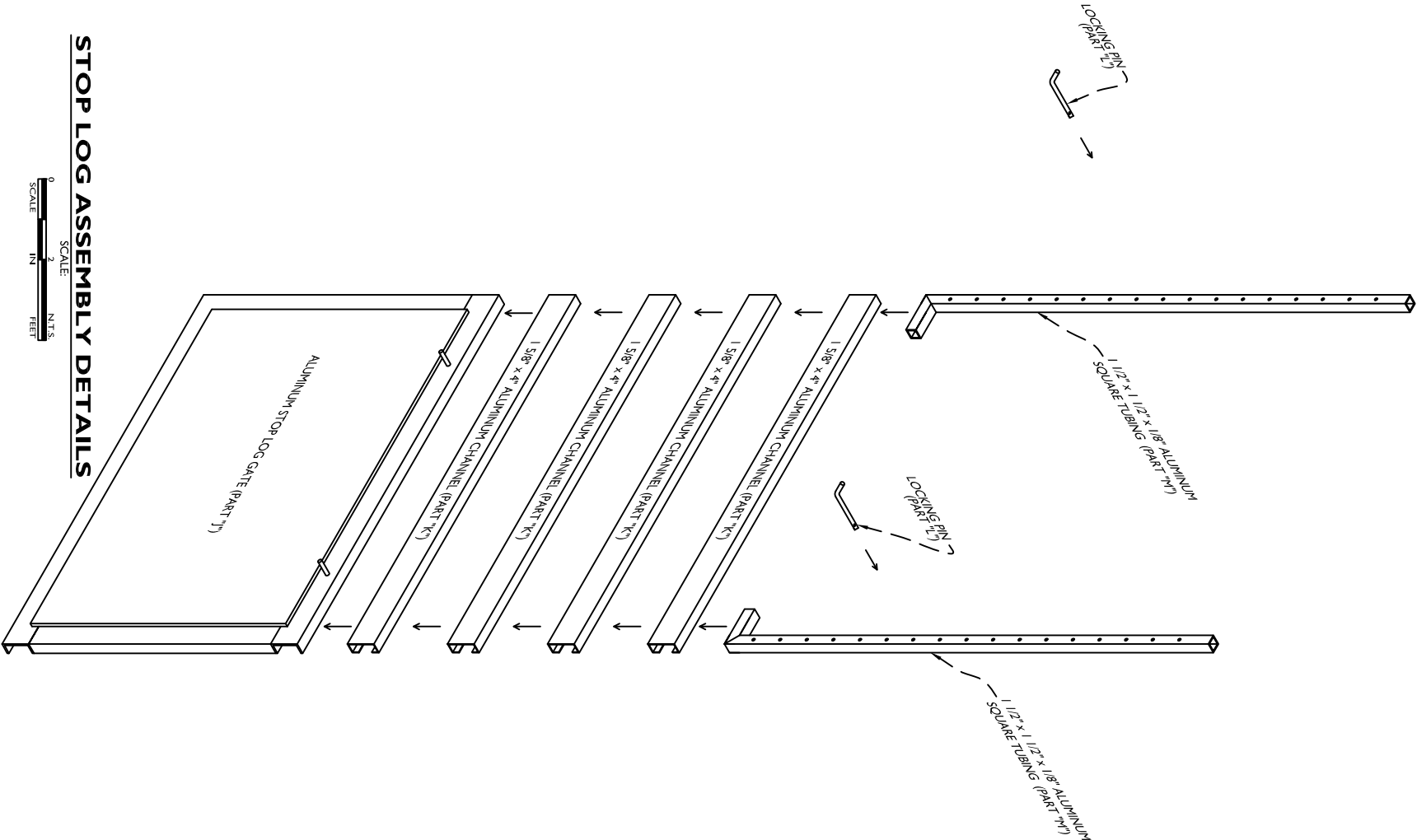
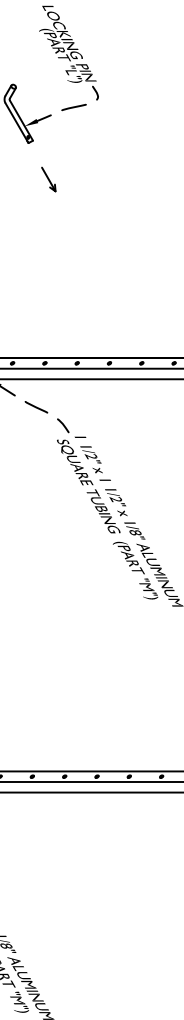
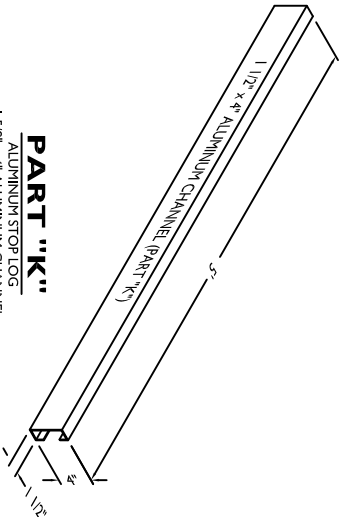
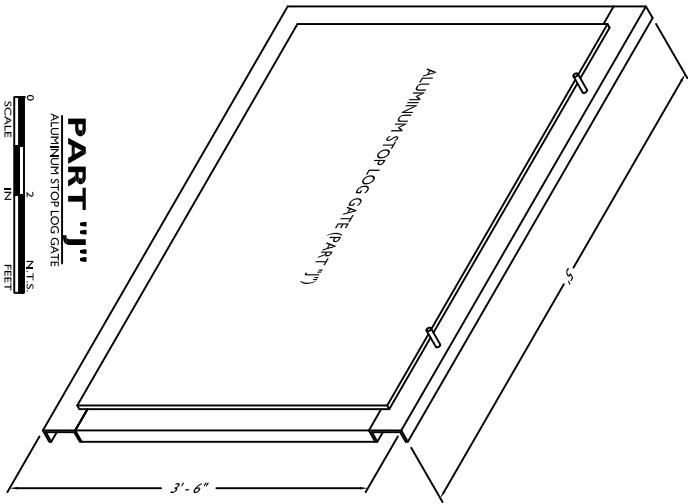
**AS-BUILT DRAWINGS**



<b>NOTE:</b>  1. 48" Ø ALUMINUM CULVERT OMITTED FOR CLARITY	REV.	DATE	DESCRIPTION	BY
	2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	CLW
<div><div>LONNIE G. HARPER and Associates, Inc. CIVIL ENGINEERING AND LAND SURVEYING 2746 Hwy 384, Bait City, Louisiana 70630 PHONE: (337) 905-1079 FAX: (337) 905-1076</div></div>				
<div>STATE OF LOUISIANA OFFICE OF COASTAL PROTECTION AND RESTORATION 450 LAUREL ST., SUITE 1501 BATON ROUGE, LOUISIANA 70801</div>				
DRAWN BY: AARON HARPER			DESIGNED BY: LONNIE HARPER	
MUD LAKE MAINTENANCE PROJECT STATE PROJECT NUMBER: CS-20			STRUCTURE "S-4" WEIR DETAILS DATE: 02/09/2009	
FEDERAL PROJECT NUMBER:			APPROVED BY: LONNIE HARPER	
			SHEET 28 OF 47	




BASE BID




STOP LOG ASSEMBLY DETAILS

AS-BUILT DRAWINGS

<b>NOTE:</b>					
1) TWO (2) STOP LOG ASSEMBLIES REQUIRED PER VARIABLE CREST WEIR.	2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	CLW	
2) CONTRACTOR REQUIRED TO PROVIDE 60 ALUMINUM STOP LOGS.					



LONNIE HARPER  
REG. NO. 13718  
REGISTERED PROFESSIONAL  
CIVIL ENGINEER



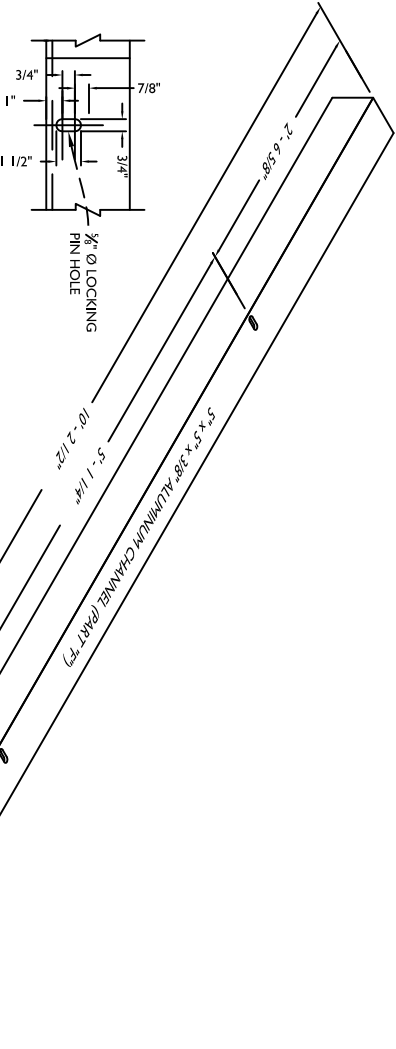
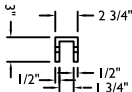
LONNIE G. HARPER  
and Associates, Inc.  
CIVIL ENGINEERING  
AND LAND SURVEYING  
2746 Hwy 384, Bell City, Louisiana 70630  
PHONE: (337) 905-1079 FAX: (337) 905-1076

STATE OF LOUISIANA		MUD LAKE		STRUCTURE "ES-4"	
OFFICE OF COASTAL PROTECTION		MAINTENANCE PROJECT		DETAILS AND PARTS	
AND RESTORATION		STATE PROJECT NUMBER:		DATE: 02/09/2009	
450 LAUREL ST., SUITE 1501		CS-20		SHEET 29 OF 47	
BATON ROUGE, LOUISIANA 70801		FEDERAL PROJECT NUMBER:			
DRAWN BY: AARON HARPER		DESIGNED BY: LONNIE HARPER			





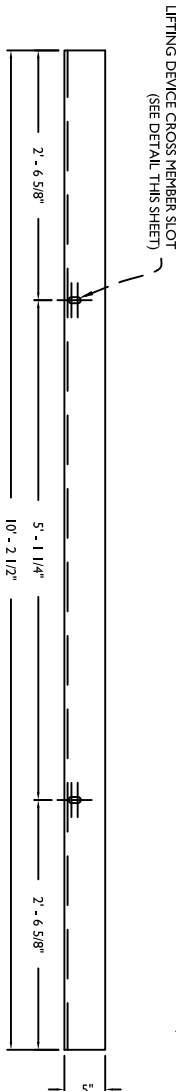
BASE BID



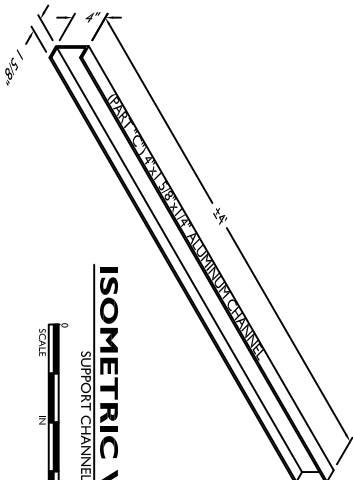
LIFTING DEVICE CROSS MEMBER  
SLOT DETAIL



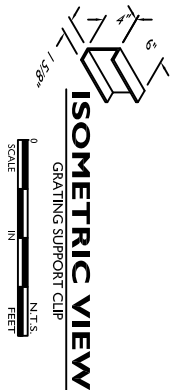
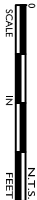
PART "F"  
LIFTING DEVICE CROSS MEMBER  
5" x 5" x 3/8" ALUMINUM ANGLE  
SCALE:



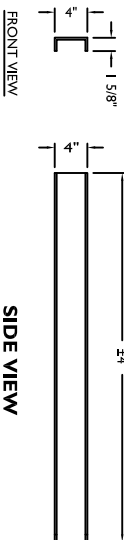
ISOMETRIC  
VIEW  
SUPPORT BEAM



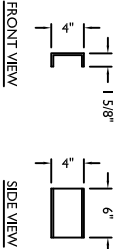
PART "A"  
STOP LOG GUIDE CHANNEL  
3" x 2 3/4" x 1/2" ALUMINUM CHANNEL  
SCALE:



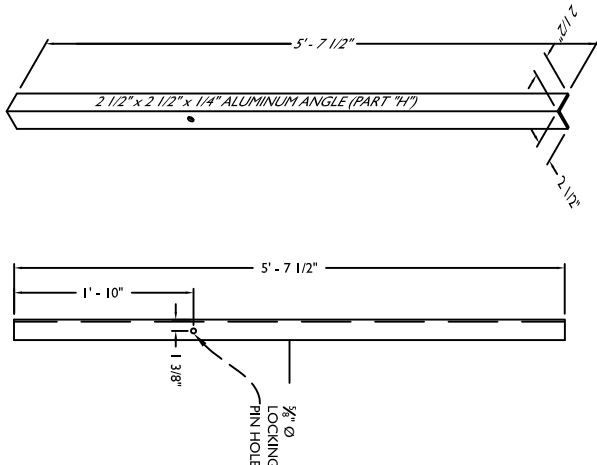
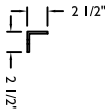
ISOMETRIC VIEW  
GRATING SUPPORT CLIP  
SCALE:



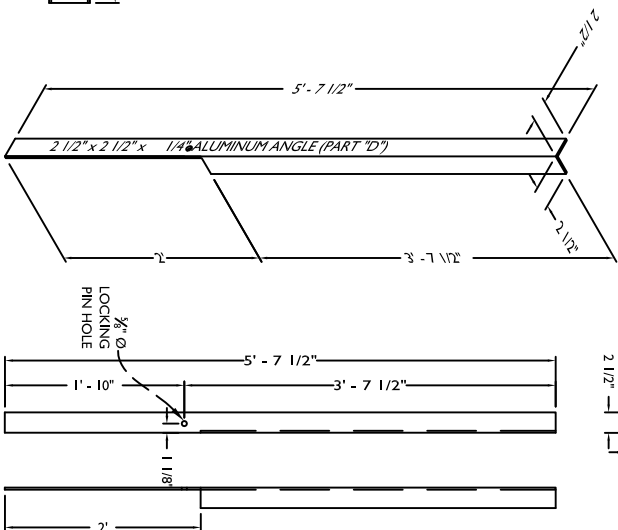
PART "C"  
SUPPORT CHANNEL  
4" x 1 5/8" x 1/4" ALUMINUM CHANNEL  
SCALE:



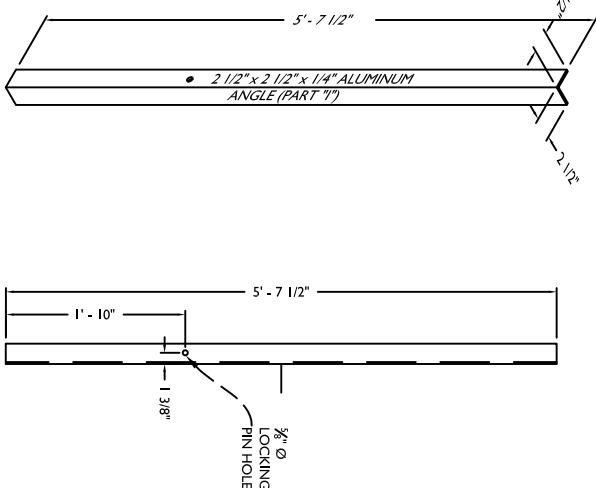
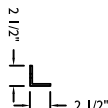
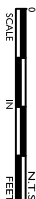
PART "B"  
GRATING SUPPORT CLIP  
6" x 4" x 1 5/8" ALUMINUM CHANNEL  
SCALE:



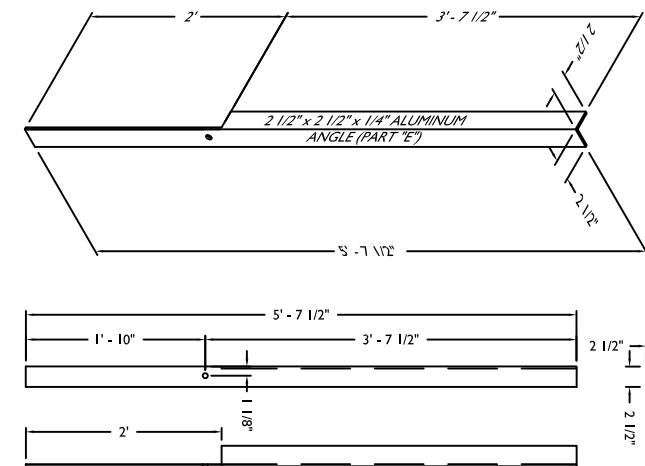
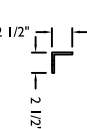
PART "H"  
LIFTING DEVICE SUPPORT (EXTERIOR)  
2 1/2" x 2 1/2" x 1/4" ALUMINUM ANGLE  
SCALE:



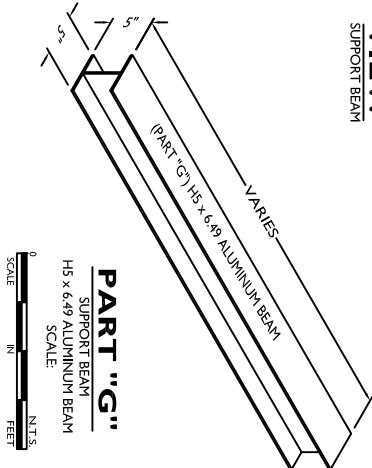
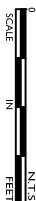
PART "D"  
LIFTING DEVICE SUPPORT (INTERIOR)  
2 1/2" x 2 1/2" x 1/4" ALUMINUM ANGLE  
SCALE:



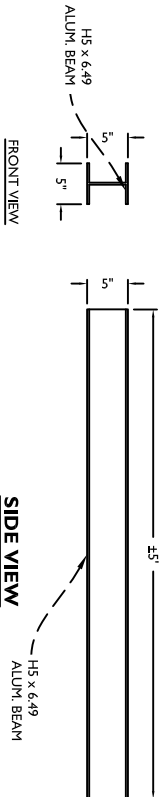
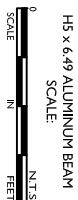
PART "I"  
LIFTING DEVICE SUPPORT (EXTERIOR)  
2 1/2" x 2 1/2" x 1/4" ALUMINUM ANGLE  
SCALE:



PART "E"  
LIFTING DEVICE SUPPORT (INTERIOR)  
2 1/2" x 2 1/2" x 1/4" ALUMINUM ANGLE  
SCALE:



PART "G"  
SUPPORT BEAM  
H5 x 6.49 ALUMINUM BEAM  
SCALE:



SIDE VIEW



LONNIE G. HARPER  
and Associates, Inc.  
CIVIL ENGINEERING  
AND LAND SURVEYING  
2746 Hwy 384, Bell City, Louisiana 70630  
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STATE OF LOUISIANA  
OFFICE OF COASTAL PROTECTION  
AND RESTORATION  
450 LAUREL ST., SUITE 1501  
BATON ROUGE, LOUISIANA 70801

DRAWN BY: AARON HARPER

DESIGNED BY: LONNIE HARPER

MUD LAKE  
MAINTENANCE PROJECT  
STATE PROJECT NUMBER:  
CS-20

STRUCTURE "ES-4"  
PARTS AND DETAILS

DATE: 02/09/2009

SHEET 31 OF 47

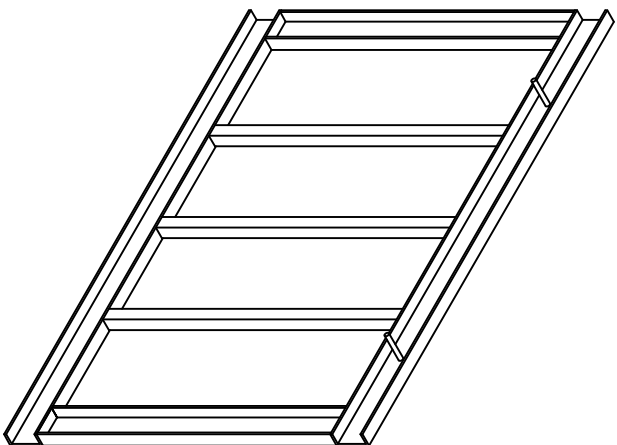
AS-BUILT DRAWINGS



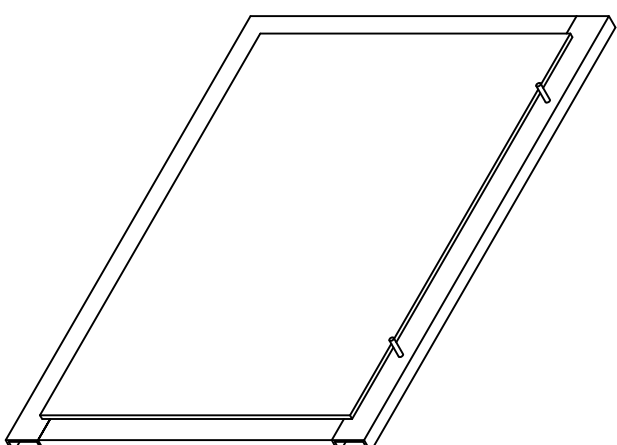
2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	CLW	BY	



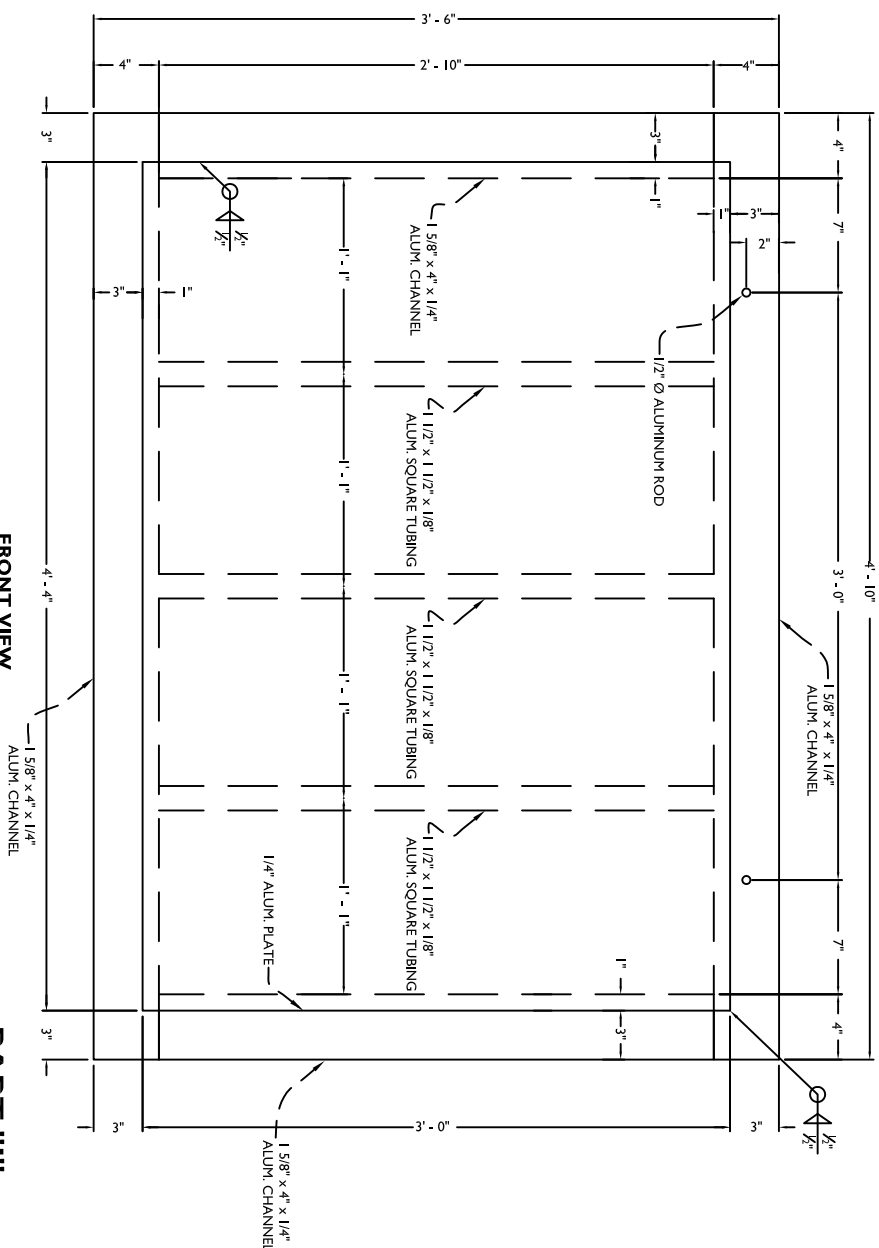
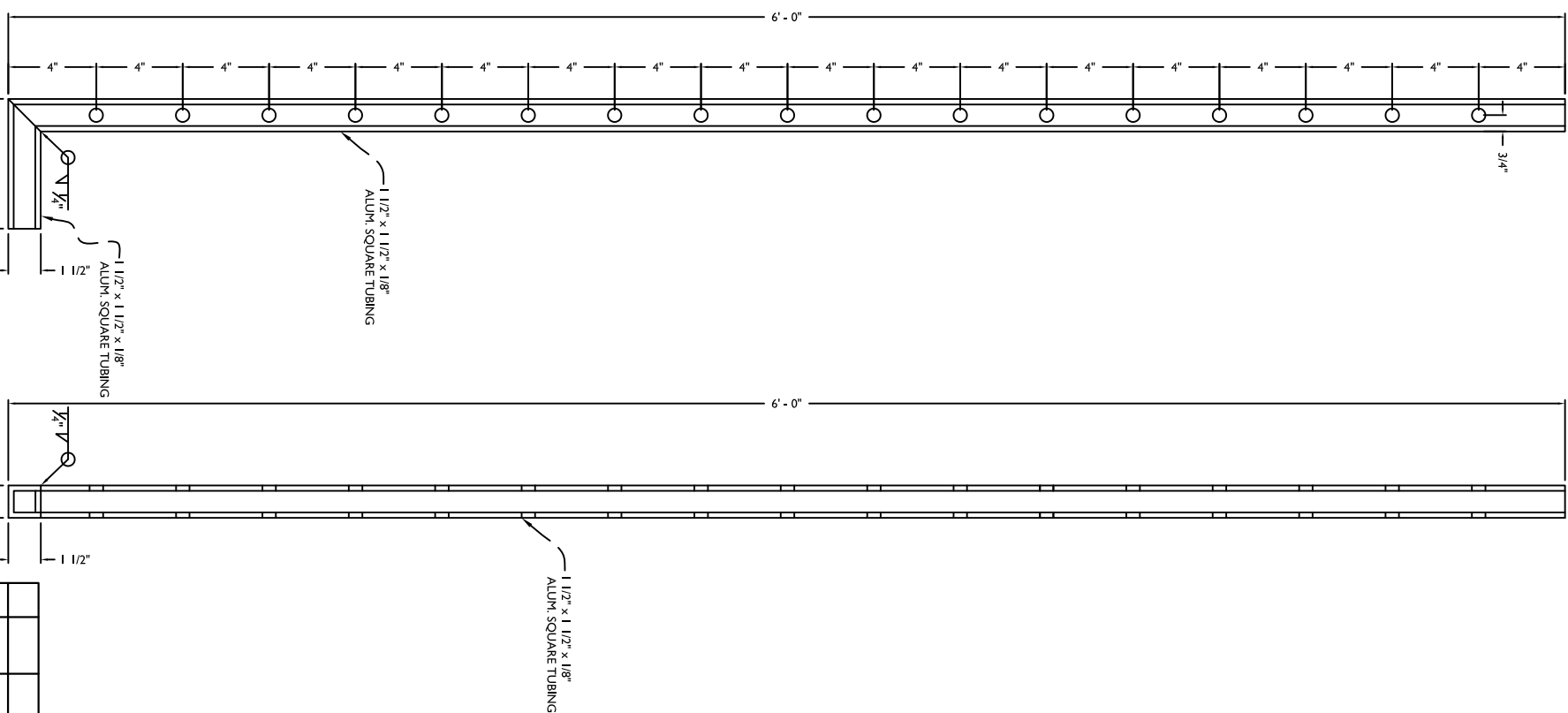


**BASE BID**

## **BACK ISOMETRIC VIEW**

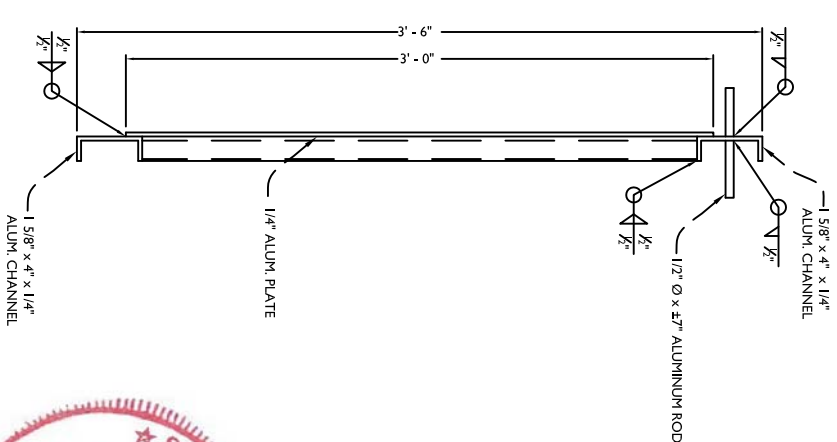


### FRONT ISOMETRIC VIEW



**FRONT VIEW**

## PART "I"

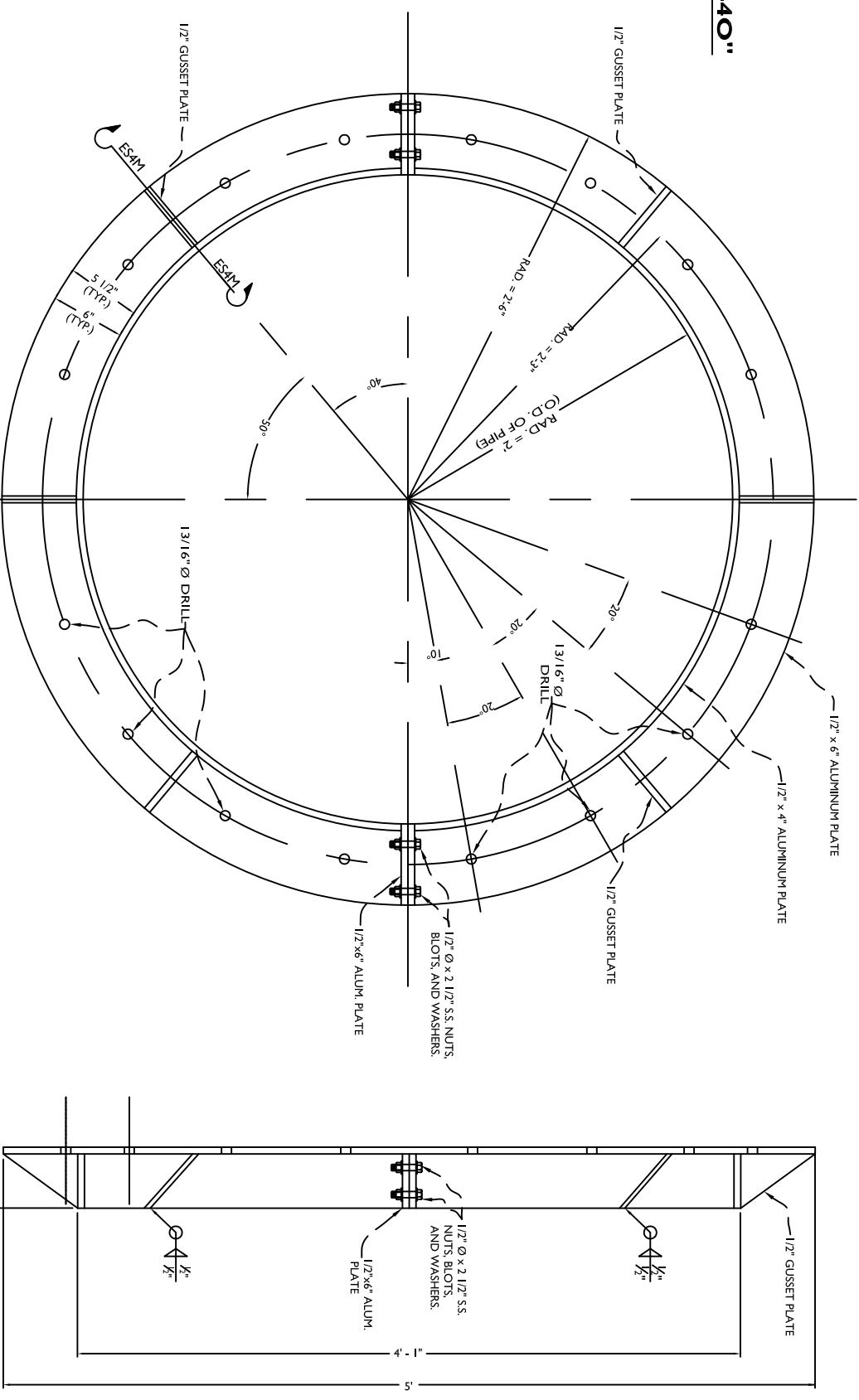
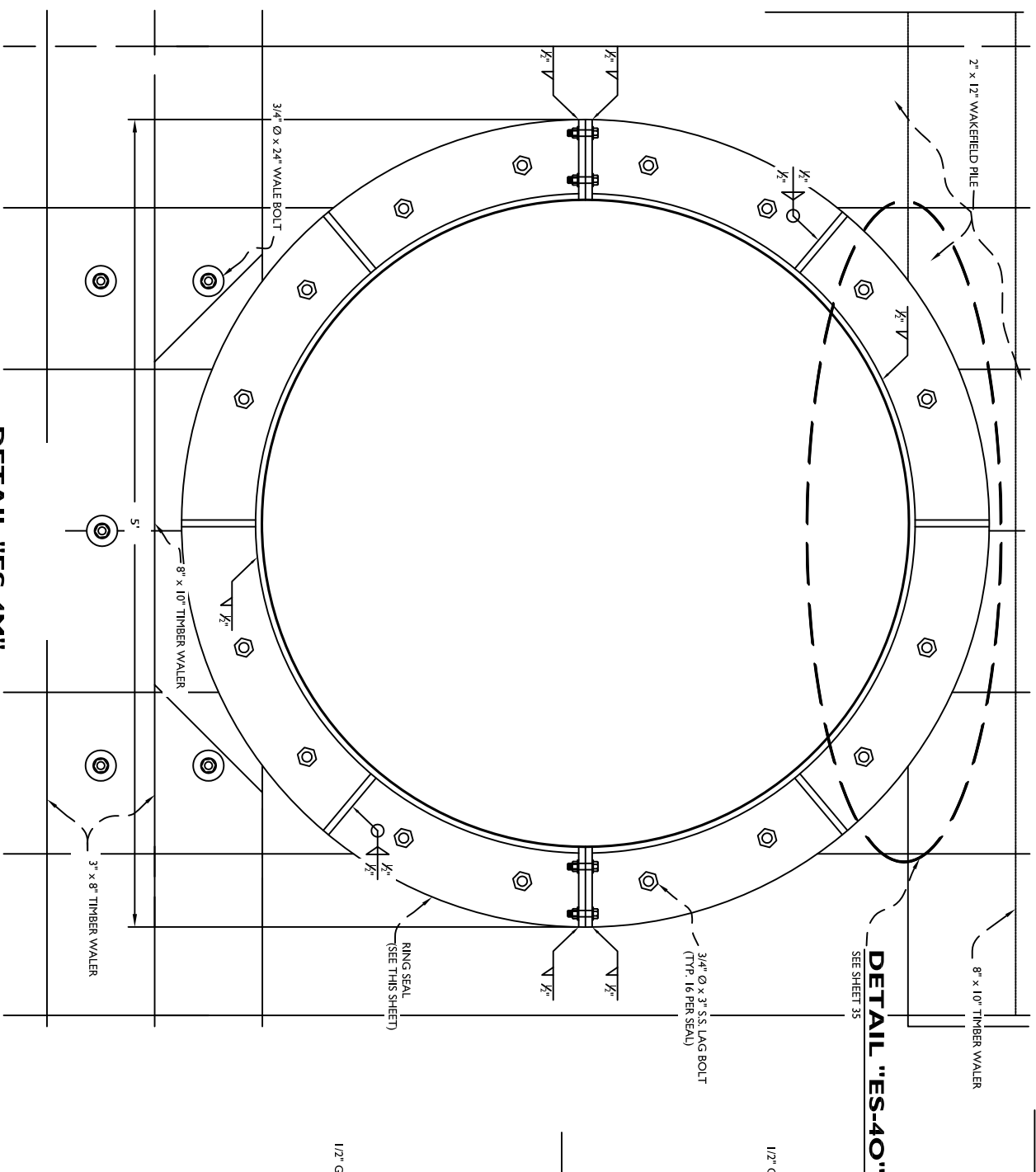


### SIDE VIEW

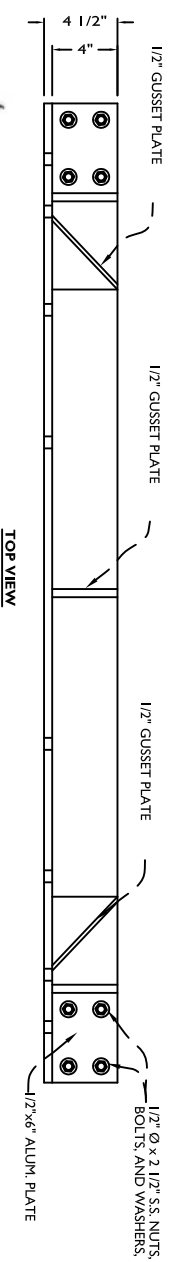


# AS-BUILT DRAWINGS

[illegible]

**BASE BID**

### DETAIL "ES-4M"



## RING SEAL DETAILS FOR 48" Ø PIPE



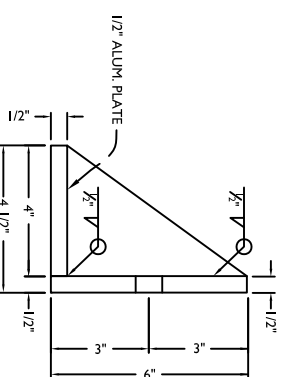
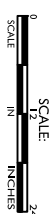
REV.	DATE	DESCRIPTION	BY
2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	CLW



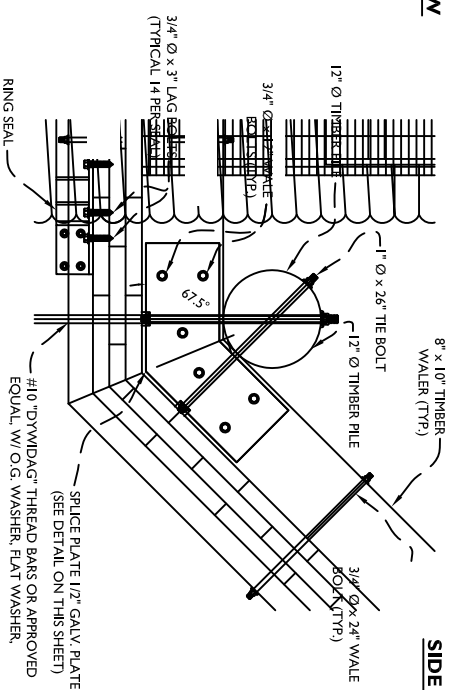
**LONNIE G. HARPER**  
and Associates, Inc.  
CIVIL ENGINEERING  
AND LAND SURVEYING

2746 Hwy 384, Bell City, Louisiana 70630  
PHONE: (337) 905-1079 FAX: (337) 905-1076

**SECTION "ES4M-ES4M"**



**DETAIL "ES-4N"**

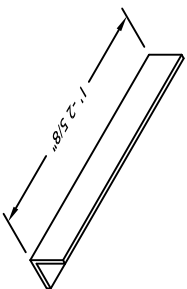


# AS-BUILT DRAWINGS

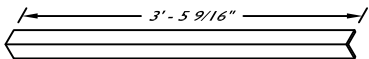
<div>STATE OF LOUISIANA</div> <div>OFFICE OF COASTAL PROTECTION</div> <div>AND RESTORATION</div> <div>450 LAUREL ST., SUITE 1501</div> <div>BATON ROUGE, LOUISIANA 70801</div>		<div>MUD LAKE</div> <div>MAINTENANCE PROJECT</div> <div>STATE PROJECT NUMBER: CS-20</div> <div>FEDERAL PROJECT NUMBER:</div>		<div>STRUCTURE "ES-4"</div> <div>DETAILS AND SECTIONS</div>
DRAWN BY: AARON HARPER	DESIGNED BY: LONNIE HARPER	APPROVED BY: LONNIE HARPER	SHEET 34 OF 47	



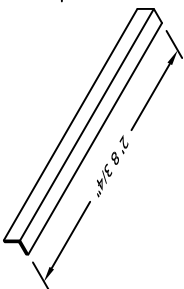
## **BASE BID**



**2" x 2" X 1/4" ALUMINUM**  
**ANGLE (PART "VV")**

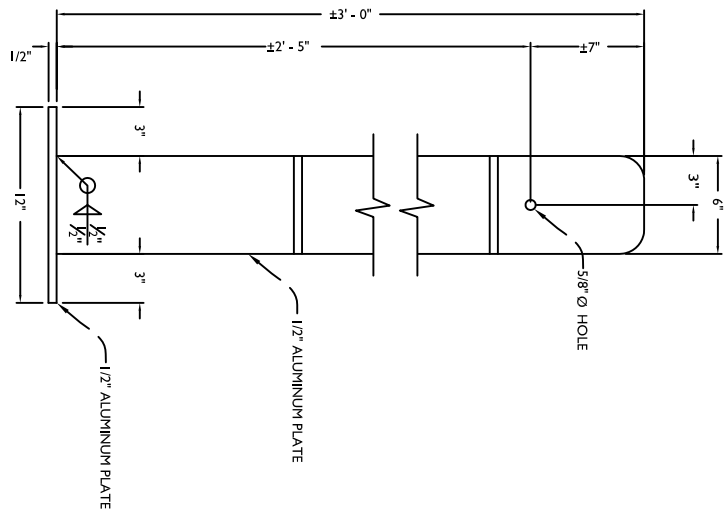
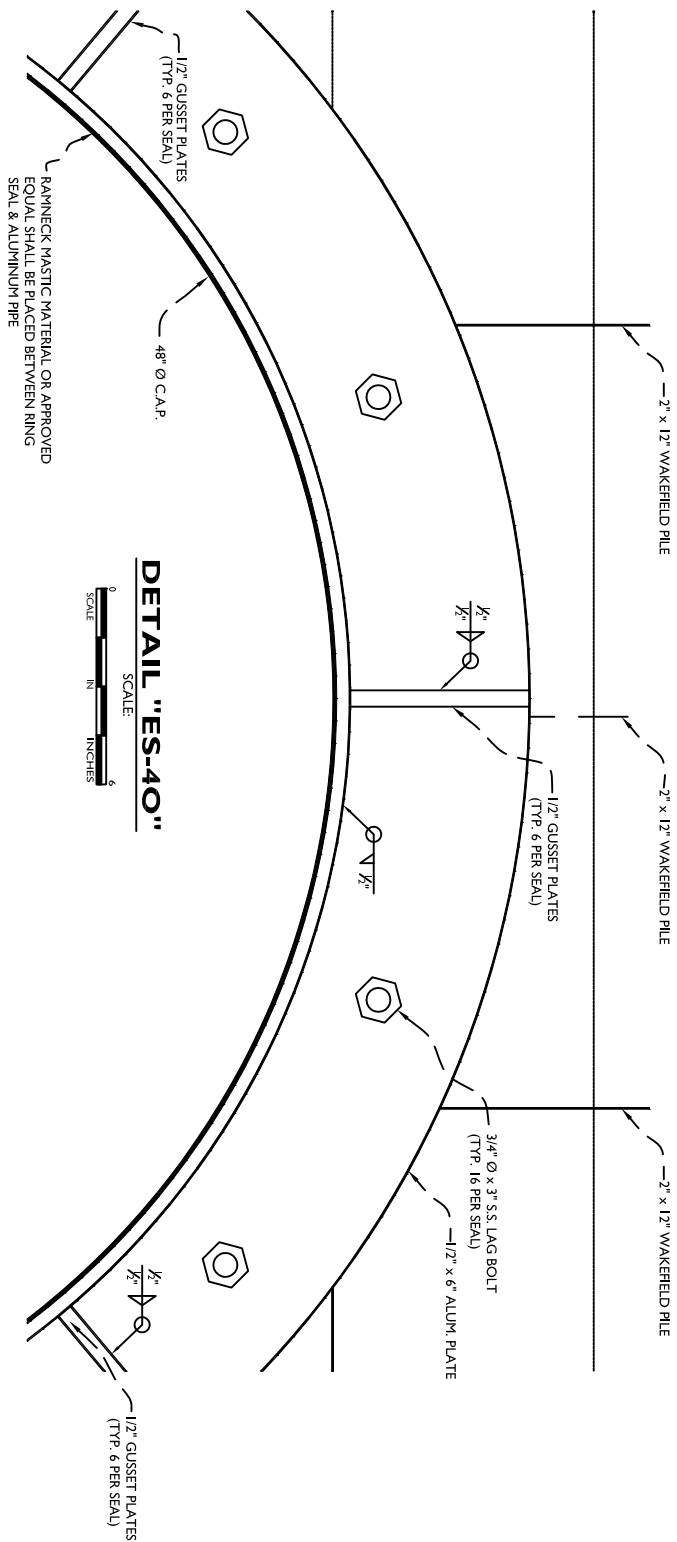
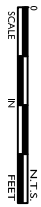


**2" x 2" X 1/4" ALUMINUM**  
**ANGLE (PART "UU")**

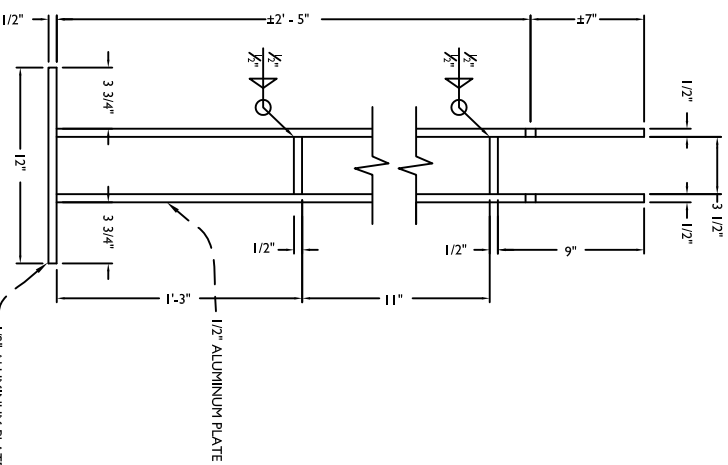


0  
SCALE IN FEET N.T.S.

2" x 2" x 1/4" ALUMINUM  
ANGLE (PART "YY")

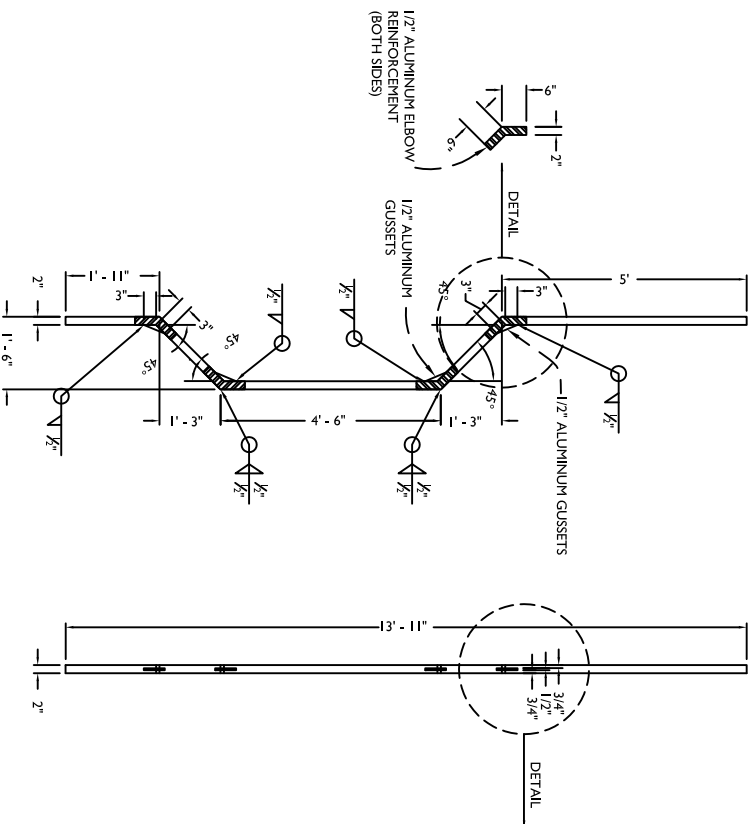


## LOCKING DEVICE FOR LIFTING ARM FOR FLAP GATES

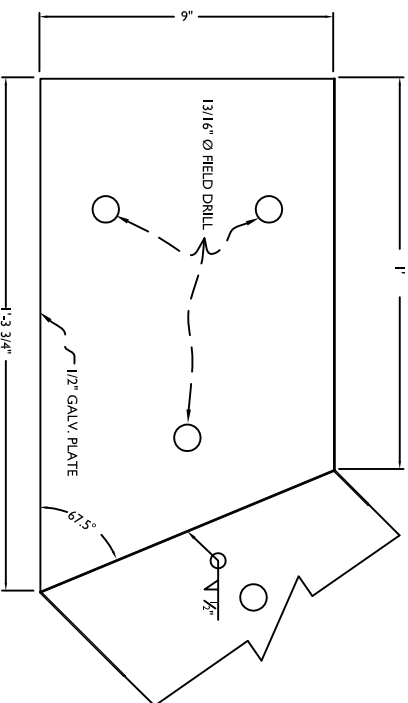


SCALE:

**NOTE:** STIFFENER PLATE IS TO BE SEAL WELDED TO THE CULVERT AT ALL POINTS OF CONTACT. SEE WELDING SPECIFICATIONS FOR FURTHER DETAIL.

[illegible]

**NOTE:**  
TWELVE (12) PLATES REQUIRED @ SIX (6) 45° SPLICE LOCATIONS. PLATES TO BE SHOP WELDED



## SPLICE PLATE DETAIL

**NOTE:** SEE WELDING SPECIFICATIONS FOR DETAILS.







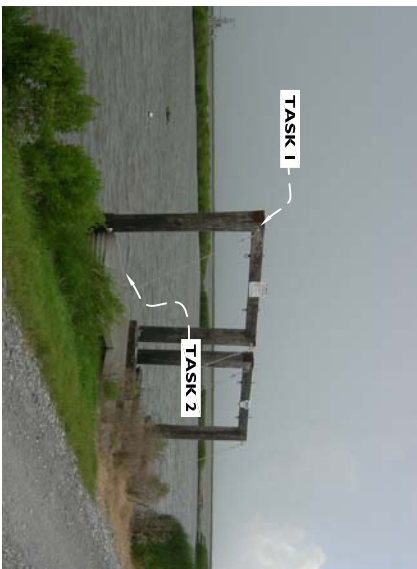








## ADD ALTERNATE "A"



**EXHIBIT "ES-8-A"**



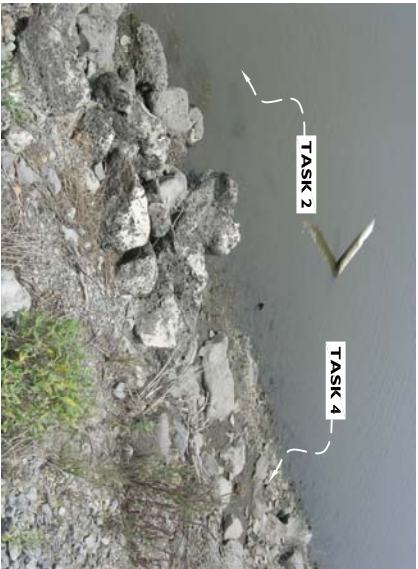
**EXHIBIT "ES-8-B"**



**EXHIBIT "ES-8-C"**



**EXHIBIT "ES-8-D"**



**EXHIBIT "ES-8-E"**



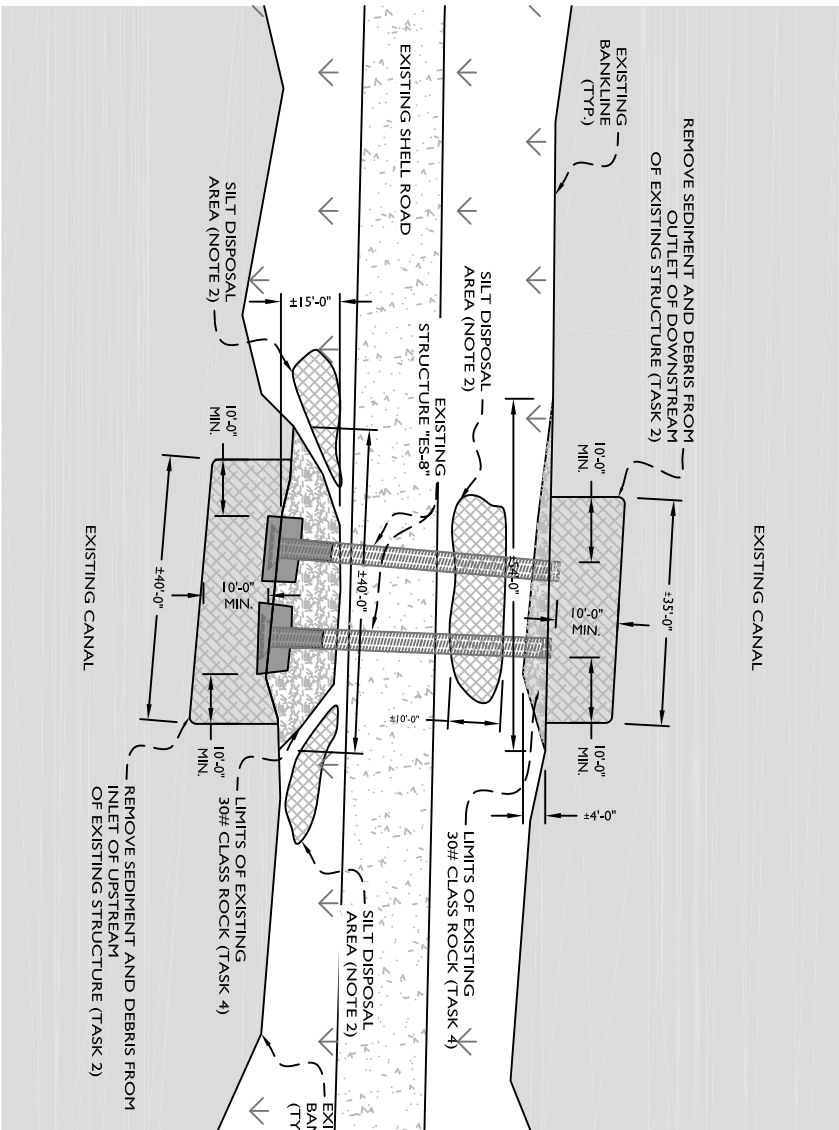
<p><b>STRUCTURE DESCRIPTION:</b></p> <p>CONSIST OF TWO (2) 36" DIAMETER, BY 40' LONG, NO. 10 GAUGE, CORRUGATED ALUMINUM PIPE, EACH WITH A 10' LONG ALUMINUM VARIABLE CREST WEIR AT THE INLET SIDE, WHICH IS THE SOUTH SIDE OF STRUCTURE. THE WEIR INLETS ARE DIVIDED INTO TWO (2) BAYS, EACH CONSISTING OF A FOUR INCH (4") WIDE, BY SIX FEET SIX INCHES (6'-6") TALL, VERTICAL SLOT. THERE IS A TOTAL OF FIFTY-TWO (52) THREE INCH (3") WIDE, BY SIX INCHES (6") TALL, BY FOUR FEET SEVEN INCHES (4'-7") LONG, TIMBER STOP LOGS.</p>
<p><b>GENERAL NOTES:</b></p> <ol style="list-style-type: none"> <li>1. SEE DETAIL "TD-B" ON SHEET 44 FOR PILE CAP DETAILS.</li> <li>2. ALL SILT REMOVED FROM THE STRUCTURE SHALL BE PLACED ALONG THE ERODED BANKLINES AFTER THE EXISTING MAN SIZED RIP-RAP HAS BEEN PLACED.</li> <li>3. THE CONTRACTOR SHALL BE REQUIRED TO CONDUCT A FIELD VISIT TO OBTAIN NECESSARY INFORMATION PRIOR TO FABRICATION OF EXISTING PILE CAPS DUE TO EXISTING HARDWARE.</li> <li>4. THE CONTRACTOR SHALL NOT DISTURB THE EXISTING RIP RAP, WHICH SHALL REMAIN IN PLACE, HAND PLACEMENT OF THE EXISTING RIP RAP MAY BE NECESSARY.</li> <li>5. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY LAND VEHICLES.</li> <li>6. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY MARINE VESSELS.</li> <li>7. THE CONTRACTOR SHALL INSTALL THE EXISTING RIP RAP A MINIMUM OF 12" THICK WITH 2:1 SIDE SLOPES.</li> </ol>
<p><b>MAINTENANCE TASKS:</b></p> <ol style="list-style-type: none"> <li>T1. REPLACE FOUR (4) PILE CAPS.</li> <li>T2. REMOVE SEDIMENT AND DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL C.A.P. (FEMA)</li> <li>T3. REPLACE FOUR (4) PADLOCKS ON STRUCTURE.</li> <li>T4. INSTALL 66 TONS OF 30# CLASS ROCK (MIN). THICKNESS OF 12 INCHES) ALONG THE ERODED BANK LINES ADJACENT TO THE EXISTING ROADWAY.</li> </ol>

2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	CLW	
REV.	DATE	DESCRIPTION	BY	

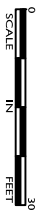


**LF**  
**LONNIE G. HARPER**  
 and Associates, Inc.  
 CIVIL ENGINEERING  
 AND LAND SURVEYING  
 2746 Hwy 384, Bell City, Louisiana 70630  
 PHONE: (337) 905-1079 FAX: (337) 905-1076

STATE OF LOUISIANA OFFICE OF COASTAL PROTECTION AND RESTORATION 450 LAUREL ST., SUITE 1501 BATON ROUGE, LOUISIANA 70801		MUD LAKE MAINTENANCE PROJECT		STRUCTURE "ES-8" DETAILS AND EXHIBITS	
DRAWN BY: AARON HARPER		STATE PROJECT NUMBER: CS-20		DATE: 02/09/2009	
		FEDERAL PROJECT NUMBER:		SHEET 39 OF 47	
DESIGNED BY: LONNIE HARPER		APPROVED BY: LONNIE HARPER			



**DETAIL "ES-8-A"**



# AS-BUILT DRAWINGS



ADD ALTERNATE "A"

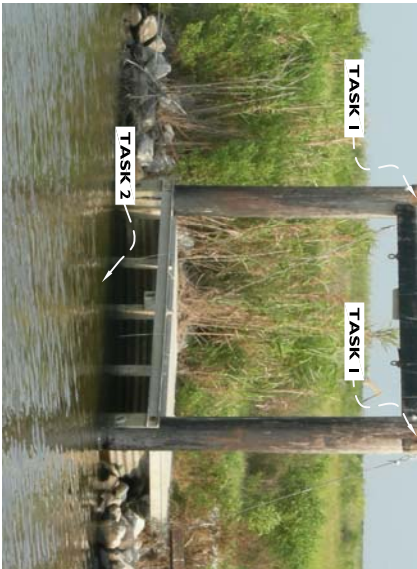


EXHIBIT "ES-9A-A"

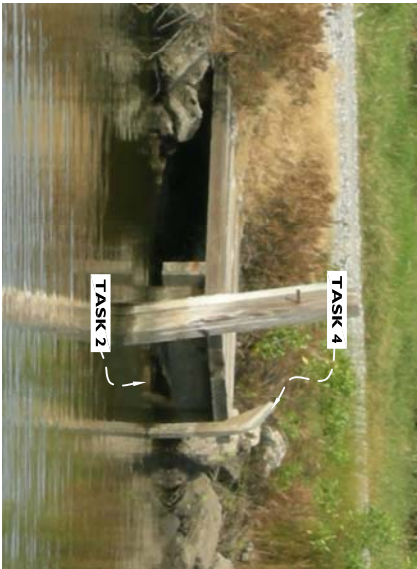


EXHIBIT "ES-9A-B"



EXHIBIT "ES-9A-C"

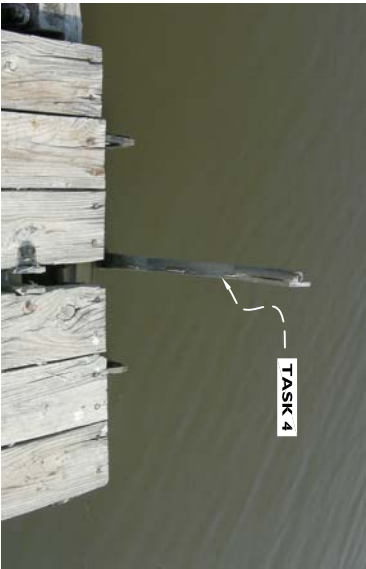


EXHIBIT "ES-9A-D"



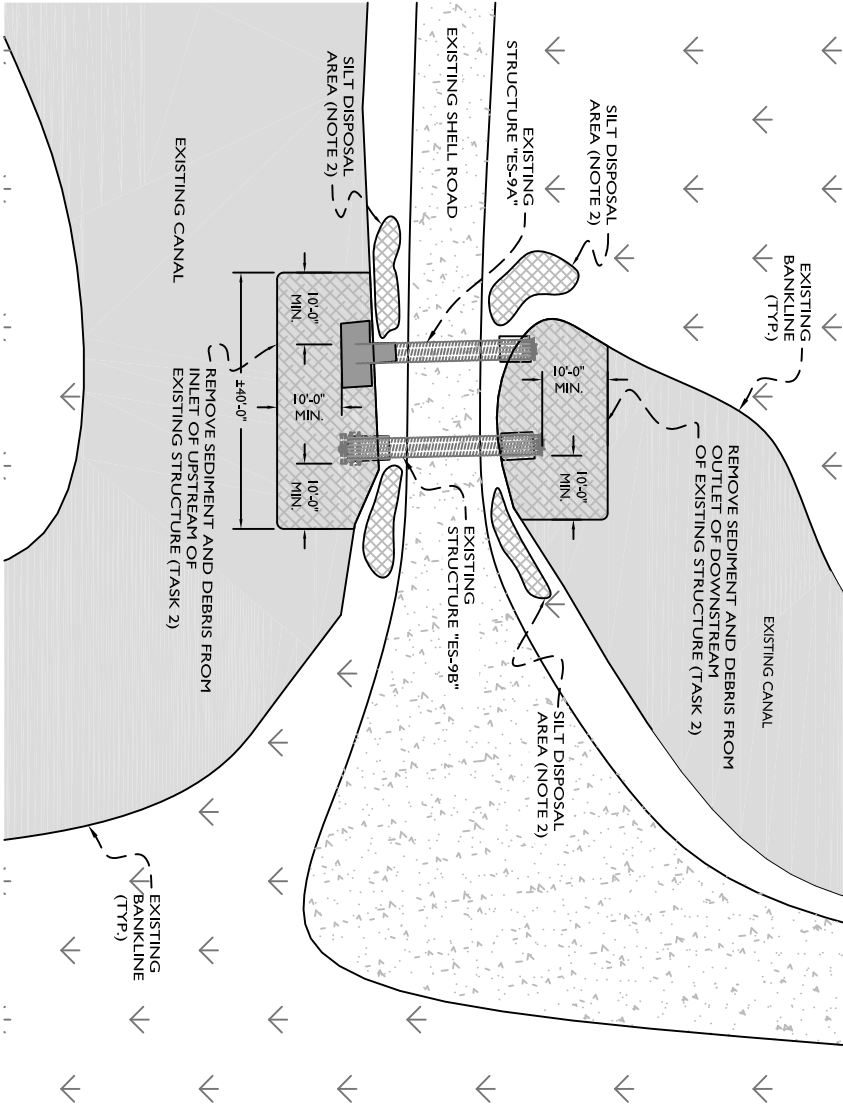
<b>STRUCTURE DESCRIPTION:</b>	
CONSIST OF ONE (1) 36" DIAMETER, BY 35' LONG, NO. 10 GAUGE CORRUGATED ALUMINUM PIPE. THERE IS A 10' LONG, ALUMINUM VARIABLE CREST WEIR AT THE INLET SIDE, WHICH IS THE SOUTH SIDE OF STRUCTURE. THERE IS ALSO AN ALUMINUM FLAP GATE ON THE OUTLET SIDE, WHICH IS THE NORTH SIDE OF THE STRUCTURE. THE WEIR INLET IS DIVIDED INTO TWO (2) BAYS, EACH CONSISTING OF A FOUR INCH (4") WIDE BY SIX FEET SIX INCHES (6'-6") TALL VERTICAL SLOT. THERE IS A TOTAL OF TWENTY-SIX (26) THREE INCH (3") WIDE, BY SIX INCHES (6") TALL, BY FOUR FEET ELEVEN INCHES (4'-11") LONG, TIMBER STOP LOGS.	
<b>GENERAL NOTES:</b>	
<ol style="list-style-type: none"><li>1. SEE DETAIL "TD-B" ON SHEET 44 FOR PILE CAP DETAILS.</li><li>2. SEE DETAIL "TD-C" ON SHEET 44 FOR FLAP GATE HANDLE DETAILS.</li><li>3. ALL SILT REMOVED FROM THE STRUCTURE SHALL BE PLACED ALONG THE ERODED BANKLINES AFTER THE EXISTING MAN SIZED RIP-RAP HAS BEEN PLACED.</li><li>4. THE CONTRACTOR SHALL BE REQUIRED TO CONDUCT A FIELD VISIT TO OBTAIN NECESSARY INFORMATION PRIOR TO FABRICATION OF EXISTING PILE CAPS DUE TO EXISTING HARDWARE.</li><li>5. THE CONTRACTOR SHALL NOT DISTURB THE EXISTING RIP RAP, WHICH SHALL REMAIN IN PLACE. HAND PLACEMENT OF THE EXISTING RIP RAP MAY BE NECESSARY.</li><li>6. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY LAND VEHICLES.</li><li>7. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY MARINE VESSELS.</li><li>9. THE CONTRACTOR SHALL INSTALL THE EXISTING RIP RAP A MINIMUM OF 12" THICK WITH 2:1 SIDE SLOPES.</li><li>10. THE CONTRACTOR SHALL FIELD BEND THE EXISTING FLAP GATE HANDLE TO ENSURE PROPER FUNCTION.</li></ol>	

<b>MAINTENANCE TASKS:</b>	
T1. REPLACE TWO (2) PILE CAPS.	
T2. REMOVE SEDIMENT AND DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL C.A.P. (FEMA)	
T3. REPLACE THREE (3) PADLOCKS ON STRUCTURE.	
T4. REPLACE ONE (1) HANDLE ON THE FLAP GATE.	
REV.	DATE
2	04/04/11
REVISED ACCORDING TO AS-BUILT CONDITIONS	
DESCRIPTION	BY
	CLW



LONNIE G. HARPER  
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PHONE: (337) 905-1079 FAX: (337) 905-1076

STATE OF LOUISIANA		MUD LAKE		STRUCTURE "ES-9A"	
OFFICE OF COASTAL PROTECTION		MAINTENANCE PROJECT		DETAILS AND EXHIBITS	
AND RESTORATION		STATE PROJECT NUMBER:		CS-20	
450 LAUREL ST., SUITE 1501		FEDERAL PROJECT NUMBER:		DATE: 02/09/2009	
BATON ROUGE, LOUISIANA 70801		DRAWN BY: AARON HARPER		APPROVED BY: LONNIE HARPER	
				SHEET 40 OF 47	



DETAIL "ES-9A-A"



AS-BUILT DRAWINGS



**BASE BID**



**EXHIBIT "ES-9B-A"**



**STRUCTURE DESCRIPTION:**

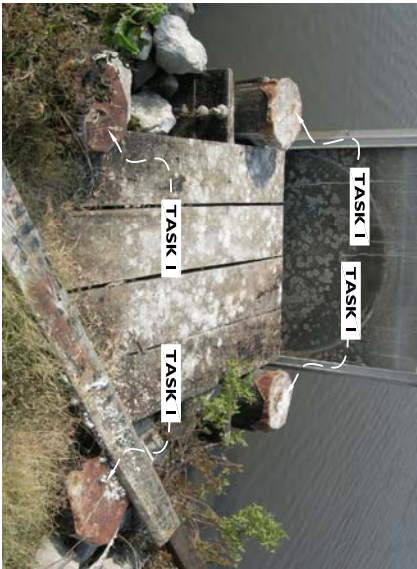
CONSISTS OF ONE (1) 48" DIAMETER, BY 30' LONG, NO. 8 GAUGE CORRUGATED ALUMINUM PIPE. THERE IS AN ALUMINUM SLUICE GATE ON THE INLET SIDE, WHICH IS THE SOUTH SIDE OF THE STRUCTURE, AND AN ALUMINUM FLAP GATE ON THE OUTLET SIDE, WHICH IS THE NORTH SIDE OF THE STRUCTURE.

**GENERAL NOTES:**

1. SEE DETAIL "TD-A" ON SHEET 44 FOR PILE CAP DETAILS.
2. SEE DETAIL "TD-C" ON SHEET 44 FOR FLAP GATE HANDLE DETAILS.
3. SEE DETAIL "TD-E" ON SHEET 44 FOR STEM COVER DETAILS.
4. SEE DETAIL "TD-J" ON SHEET 45 FOR SEAT FLANGE DETAILS.
5. ALL SILT REMOVED FROM THE STRUCTURE SHALL BE PLACED ALONG THE ERODED BANKLINES AFTER THE EXISTING MAN SIZED RIP-RAP HAS BEEN PLACED.
6. THE CONTRACTOR SHALL BE REQUIRED TO CONDUCT A FIELD VISIT TO OBTAIN NECESSARY INFORMATION PRIOR TO FABRICATION OF EXISTING PILE CAPS DUE TO EXISTING HARDWARE.
7. THE CONTRACTOR SHALL NOT DISTURB THE EXISTING RIP RAP, WHICH SHALL REMAIN IN PLACE. HAND PLACEMENT OF THE EXISTING RIP RAP MAY BE NECESSARY.
8. THE CONTRACTOR SHALL MAINTAIN THE CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY LAND VEHICLES.
9. THE CONTRACTOR SHALL MAINTAIN THE CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY MARINE VESSELS.
10. THE CONTRACTOR SHALL INSTALL THE EXISTING RIP RAP A MINIMUM OF 12" THICK WITH 2:1 SIDE SLOPES.

### MAINTENANCE TASKS:

- T1. REPLACE FOUR (4) PILE CAPS.
- T2. REMOVE DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL C.A.P. (FEMA)
- T3. REPLACE ONE (1) PADLOCK ON STRUCTURE.
- T4. REPLACE ONE (1) FIELD BENT HANDLE ON THE FLAP GATE.
- T5. REMOVE, INSPECT AND REFURBISH ONE (1) GEAR BOX ON THE SLUICE GATE (INCLUDES GREASING EXISTING STEM AND CHECKING ALIGNMENT).
- T6. INSTALL ONE (1) STEM COVER.
- T7. REPLACE ONE (1) SEAT FLANGE ON FLAP GATE.



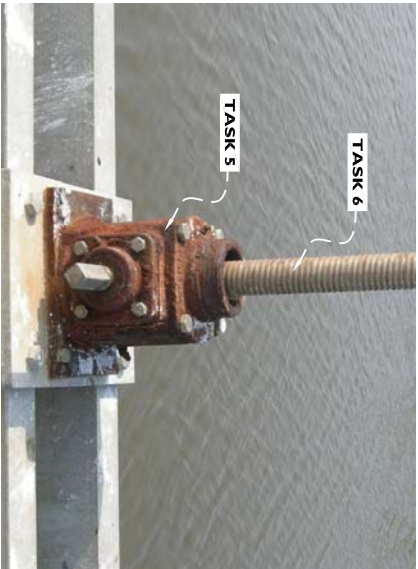
**EXHIBIT "ES-9B-B"**



**EXHIBIT "ES-9B-C"**



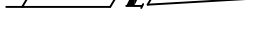
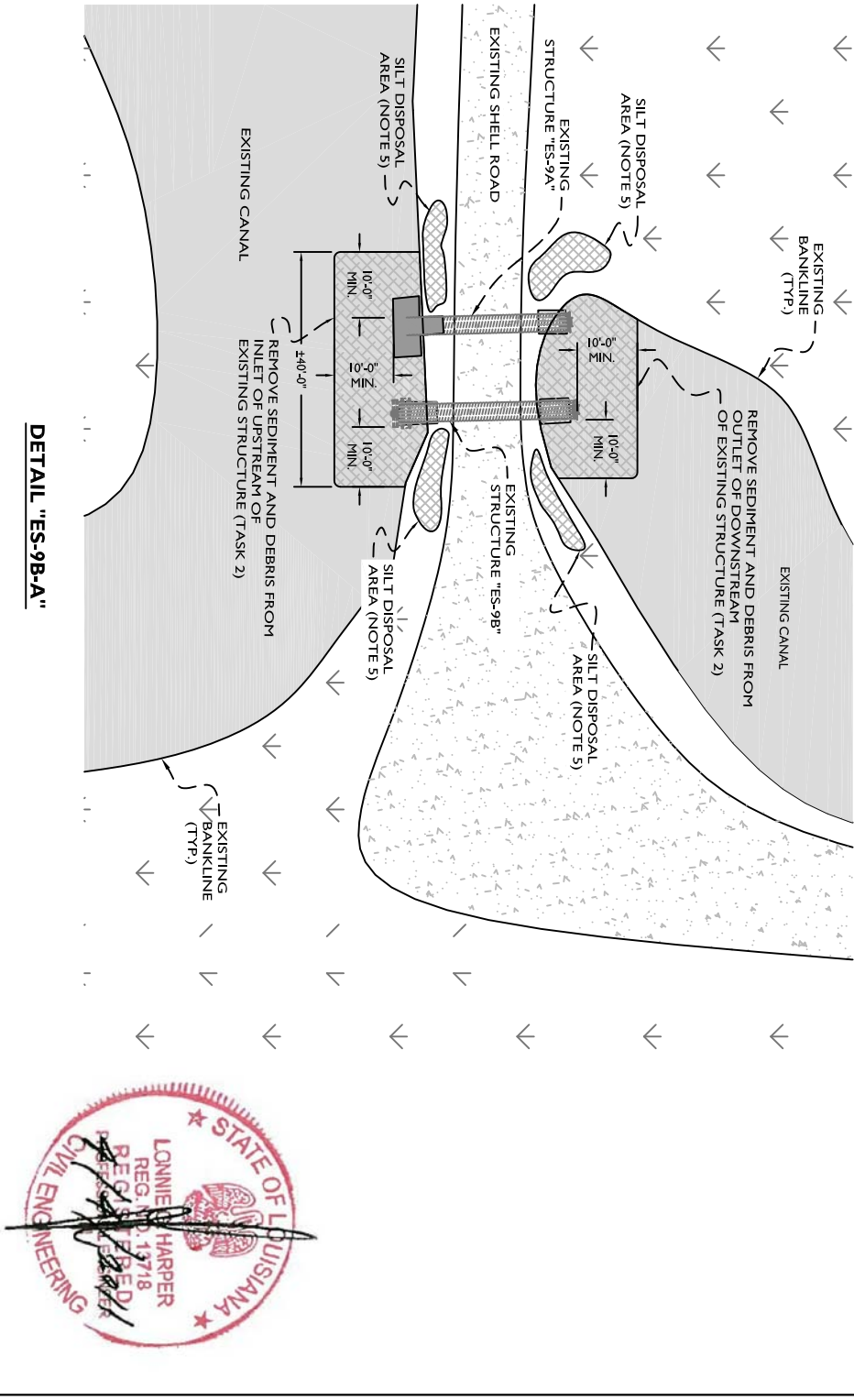
**EXHIBIT "ES-9B-D"**



**EXHIBIT "ES-9B-E"**

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# AS-BUILT DRAWINGS





ADD ALTERNATE "A"

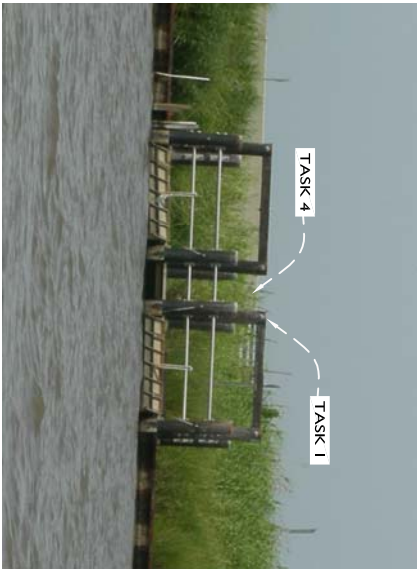


EXHIBIT "ES-13-A"



EXHIBIT "ES-13-B"



EXHIBIT "ES-13-C"

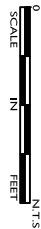


EXHIBIT "ES-13-D"



EXHIBIT "ES-13-E"



EXHIBIT "ES-13-F"



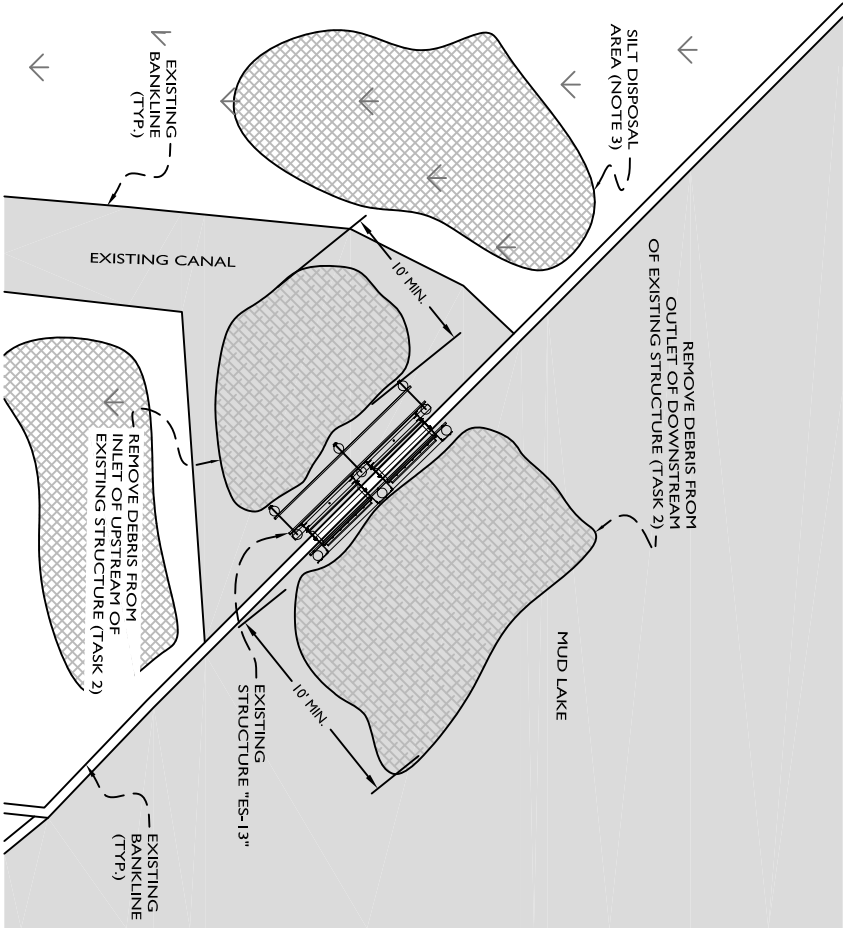
<b>STRUCTURE DESCRIPTION:</b>
CONSIST OF ONE (1) 160' STEEL SHEET PILE BULKHEAD WITH TWO (2) 7' WIDE VARIABLE CREST WEIRS AND TWO (2) 7' x 5' ALUMINUM FLAP GATES. THERE ARE A TOTAL OF TWENTY-SIX (26) FOUR INCH (4") WIDE, BY SIX INCH (6") TALL, BY SIX FEET ELEVEN INCHES (6'-11") LONG TIMBER STOP LOGS.
<b>GENERAL:</b>
1. SEE SHEET 44 FOR PILE CAP DETAILS.
2. SEE DETAILS 'SD-A" ON SHEET 44 FOR WARNING SIGN DETAILS.
3. ALL SILT REMOVED FROM THE STRUCTURE SHALL BE PLACED ALONG THE ERODED BANK LINES.
4. THE CONTRACTOR SHALL BE REQUIRED TO CONDUCT A FIELD VISIT TO OBTAIN NECESSARY INFORMATION PRIOR TO FABRICATION OF PROPOSED PILE CAPS DUE TO EXISTING HARDWARE.
5. THE CONTRACTOR SHALL NOT DISTURB THE EXISTING RIP RAP, WHICH SHALL REMAIN IN PLACE. HAND PLACEMENT OF THE PROPOSED RIP RAP MAY BE NECESSARY.
6. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY LAND VEHICLES.
7. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY MARINE VESSELS.

T1.	REPLACE TWELVE (12) PILE CAPS.
T2.	REMOVE DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL C.A.P.
T3.	REPLACE FOUR (4) PADLOCKS ON STRUCTURES.
T4.	REPLACE TWO (2) WARNING SIGNS.
T5.	REPLACE A TOTAL OF ONE HUNDRED SEVENTY FIVE LINEAR FEET (175) OF STEEL SHEET PILE CAP ON THE STRUCTURE.
REV.	DATE

LONNIE G. HARPER  
and Associates, Inc.  
CIVIL ENGINEERING  
AND LAND SURVEYING  
2746 Hwy 384, Bell City, Louisiana 70630  
PHONE: (337) 905-1079 FAX: (337) 905-1076

STATE OF LOUISIANA OFFICE OF COASTAL PROTECTION AND RESTORATION 450 LAUREL ST., SUITE 1501 BATON ROUGE, LOUISIANA 70801		MUD LAKE MAINTENANCE PROJECT STATE PROJECT NUMBER: CS-20	STRUCTURE "ES-13" DETAILS AND EXHIBITS
DRAWN BY: AARON HARPER		DESIGNED BY: LONNIE HARPER	APPROVED BY: LONNIE HARPER
		FEDERAL PROJECT NUMBER:	DATE: 02/09/2009
			SHEET 42 OF 47

AS-BUILT DRAWINGS

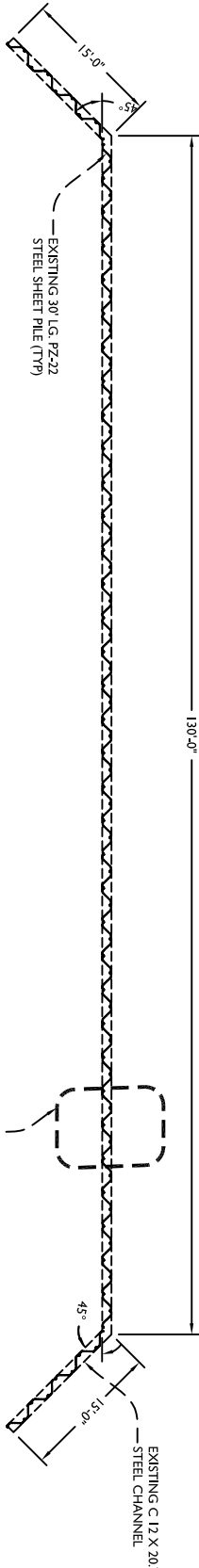


DETAIL "ES-13-A"

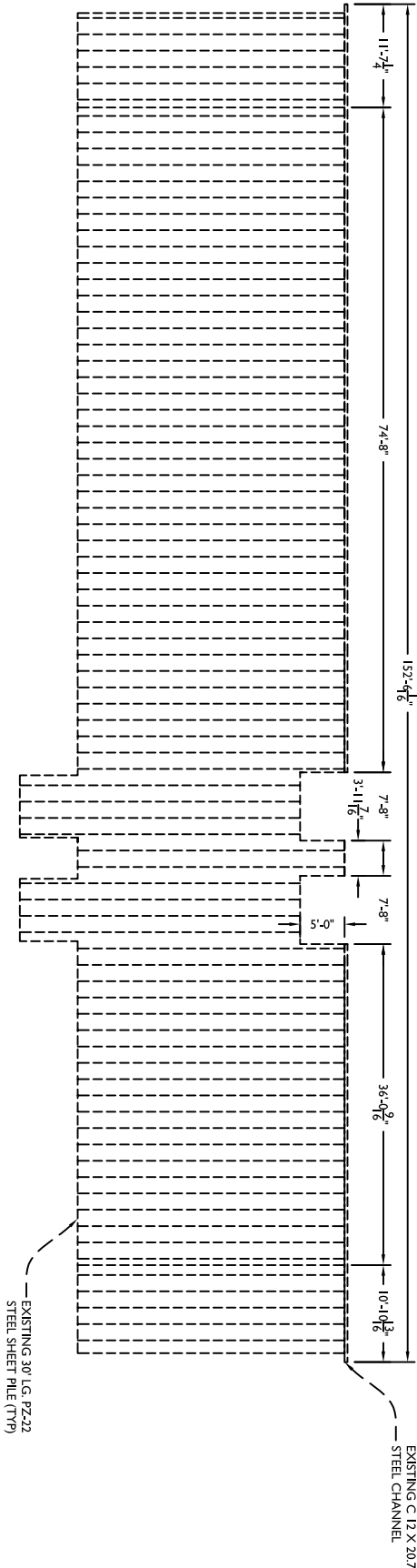
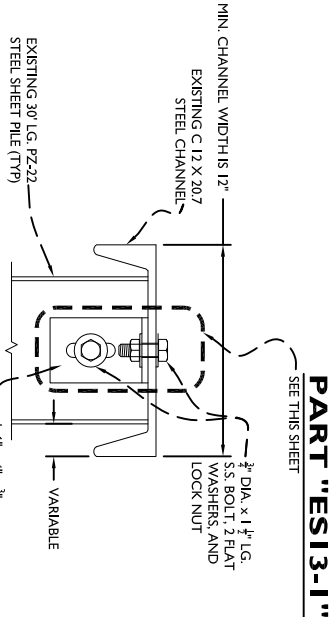




ADD ALTERNATE "A"

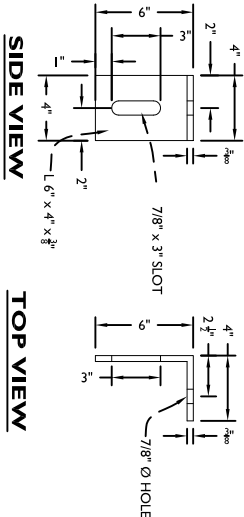


PLAN VIEW



ELEVATION VIEW

DETAIL "ES-13B"



SIDE VIEW

TOP VIEW

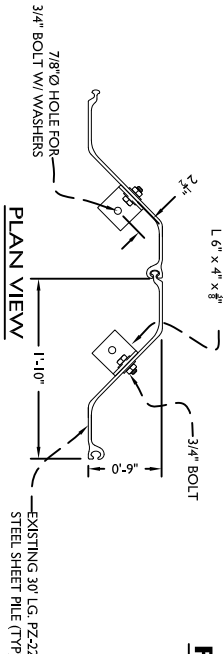
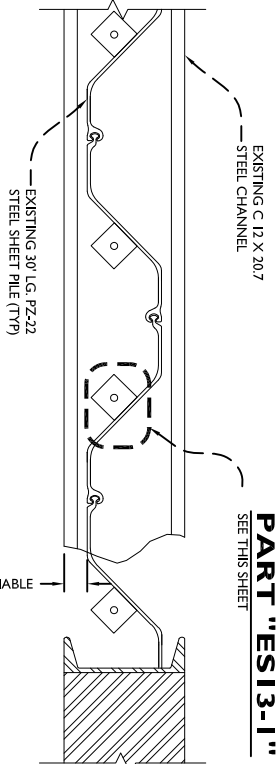
CONSIST OF ONE (1) 160' STEEL SHEET PILE BULKHEAD WITH TWO (2) 7' WIDE VARIABLE CREST WEIRS AND TWO (2) 7' x 5' ALUMINUM FLAP GATES. THERE ARE A TOTAL OF TWENTY-SIX (26) FOUR INCH (4") WIDE, BY SIX INCH (6") TALL, BY SIX FEET ELEVEN INCHES (6'-11") LONG TIMBER STOP LOGS.

GENERAL:

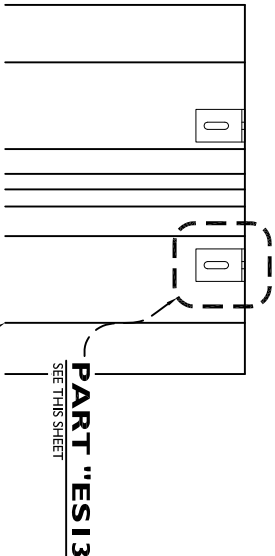
1. SEE DETAILS "TD-A" THRU "TD-B" ON SHEET 44 FOR PILE CAP DETAILS.
2. SEE DETAIL "SD-A" ON SHEET 44 FOR WARNING SIGN DETAILS.
3. ALL SILT REMOVED FROM THE STRUCTURE SHALL BE PLACED ALONG THE ERODED BANK LINES.
4. THE CONTRACTOR SHALL BE REQUIRED TO CONDUCT A FIELD VISIT TO OBTAIN NECESSARY INFORMATION PRIOR TO FABRICATION OF EXISTING PILE CAPS DUE TO EXISTING HARDWARE.
5. THE CONTRACTOR SHALL NOT DISTURB THE EXISTING RIP RAP, WHICH SHALL REMAIN IN PLACE. HAND PLACEMENT OF THE EXISTING RIP RAP MAY BE NECESSARY.
6. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY LAND VEHICLES.
7. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS ADJACENT TO THE STRUCTURE SITE BY MARINE VESSELS.

MAINTENANCE TASKS:


- T1. REPLACE TWELVE (12) PILE CAPS.
- T2. REMOVE DEBRIS FROM WITHIN, AND FROM BOTH ENDS OF ALL C.A.P. (BOLD)
- T3. REPLACE FOUR (4) PADLOCKS ON STRUCTURES.
- T4. REPLACE TWO (2) WARNING SIGNS.
- T5. REPLACE A TOTAL OF ONE HUNDRED SEVENTY FIVE LINEAR FEET (175) OF STEEL SHEET PILE CAP ON THE STRUCTURE WHICH SHALL BE SAND BLASTED AND COAL TAR EPOXY COATED PRIOR TO INSTALLATION.

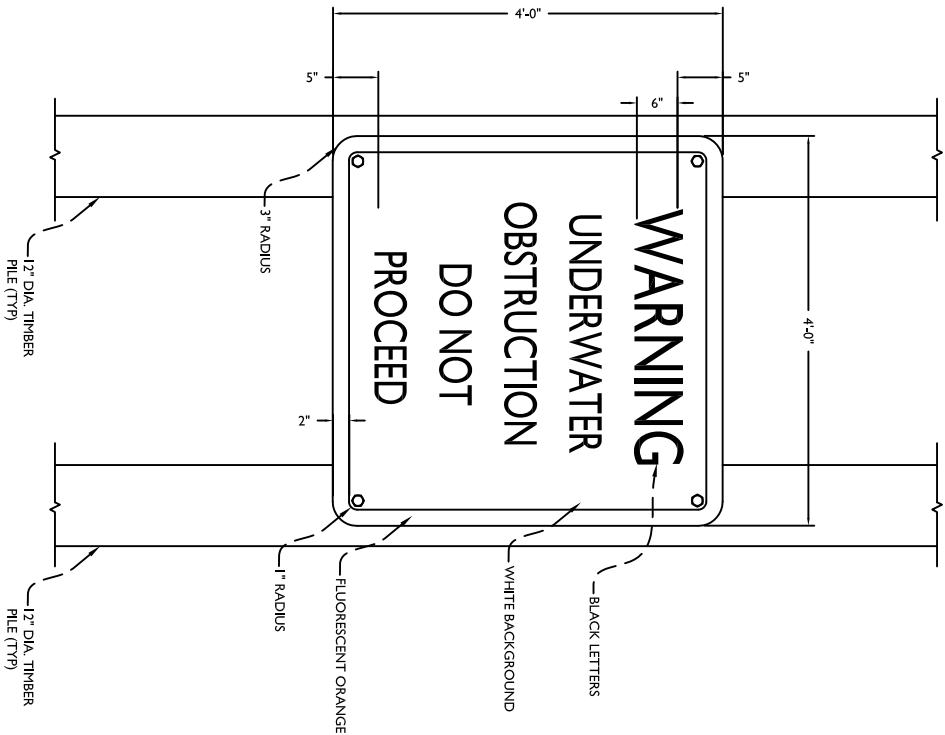


DETAIL "ES-13D"



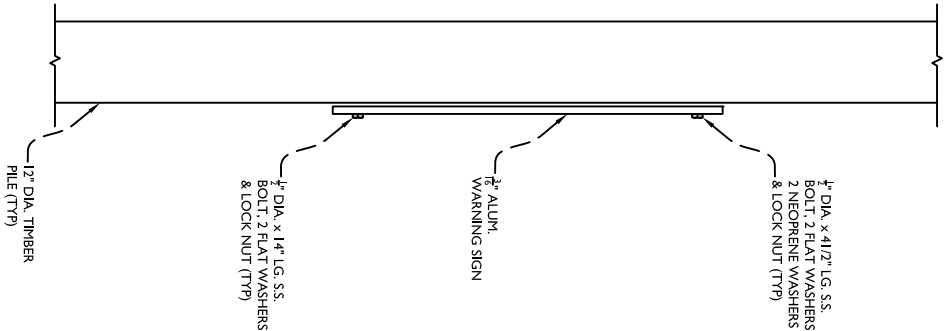
AS-BUILT DRAWINGS

2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	CLW		
REV.	DATE	DESCRIPTION	BY		
<div><div><div>LONNIE G. HARPER and Associates, Inc. CIVIL ENGINEERING AND LAND SURVEYING 2746 Hwy 384, Bell City, Louisiana 70630 PHONE: (337) 905-1079 FAX: (337) 905-1076</div></div><div>STATE OF LOUISIANA OFFICE OF COASTAL PROTECTION AND RESTORATION 450 LAUREL ST., SUITE 1501 BATON ROUGE, LOUISIANA 70801</div><div>MUD LAKE MAINTENANCE PROJECT STATE PROJECT NUMBER: CS-20 FEDERAL PROJECT NUMBER: DATE: 02/09/2009 SHEET 43 OF 47</div></div>					
DRAWN BY: AARON HARPER				DESIGNED BY: LONNIE HARPER	
				APPROVED BY: LONNIE HARPER	



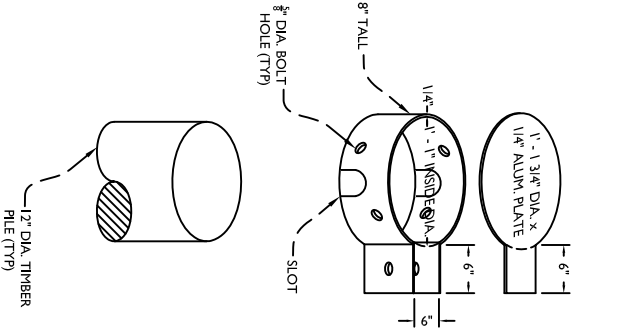
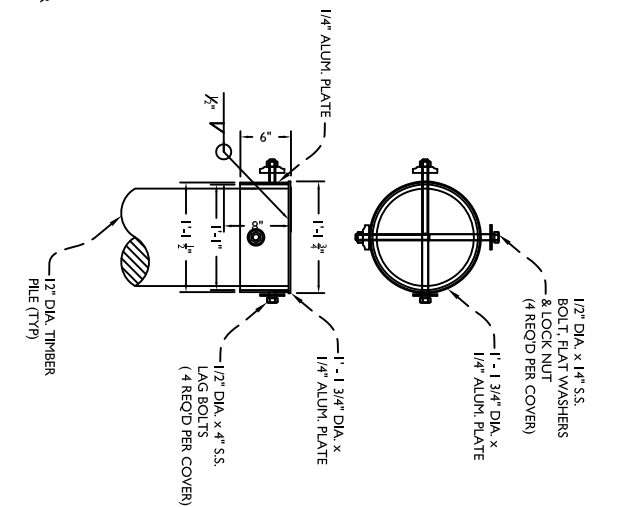
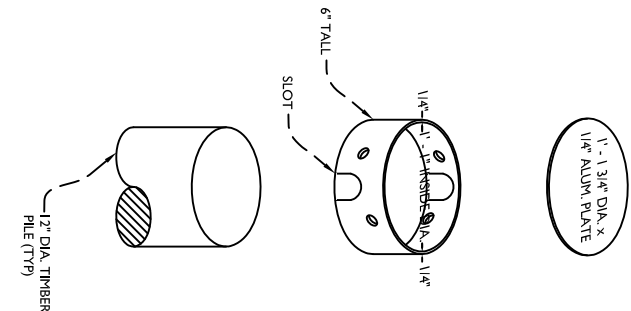
ELEVATION VIEW

DETAIL "SD-A"

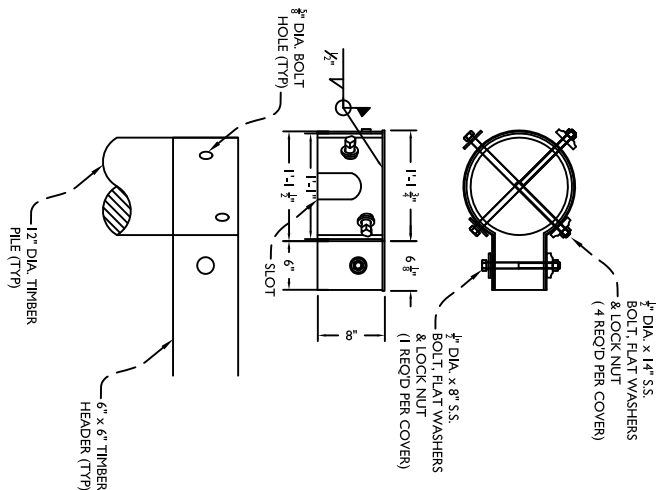


SIDE VIEW

DETAIL "TD-A"



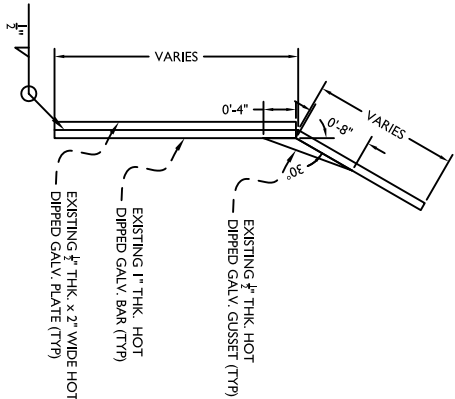
DETAIL "TD-B"



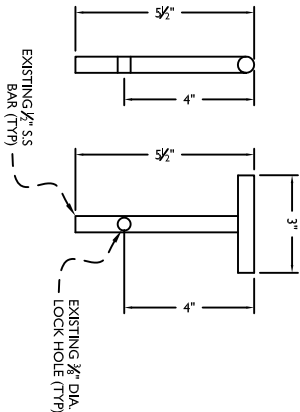
- NOTES:**
1. IF PILE DIAMETER EXCEEDS 13" CONTRACTOR WILL BE RESPONSIBLE FOR RESIZING THE METAL ROUND PILE COVER ACCORDINGLY. ALL PILE COVERS MUST OVERLAP THE TOP OF THE PILE A MINIMUM OF 3 1/2".
  2. THE SAWED SURFACE OF PILING SHALL BE THOROUGHLY BRUSH COATED WITH KARNAK NO. 83 FIBRATED DAMPROOFING. THEN PLACE 2 LAYERS OF HEAVY CANVASS (14 OZ. MIN. PER SQ. YD.) 14"x14" SATURATED W/KARNAK NO. 83 FIBRATED DAMP PROOFING. FOLLOWED BY 1/4" ALUMINUM PLATE AS SHOWN. PLACE ALUMINUM CAP OVER PILE, AND ATTACH W/ 1/2" Ø x 14" S.S. BOLTS.
  3. THE 1/2" BOLTS SHOULD BE DRILLED ALLOWING THEM TO GO THROUGH THE PILE LEAVING A MINIMUM OF 1/2" FROM THE TOP OF THE PILE.
  4. THE SLOTS SHOWN SHALL BE FIELD FITTED TO ALLOW FOR CLEARANCE OF EXISTING FASTENERS.



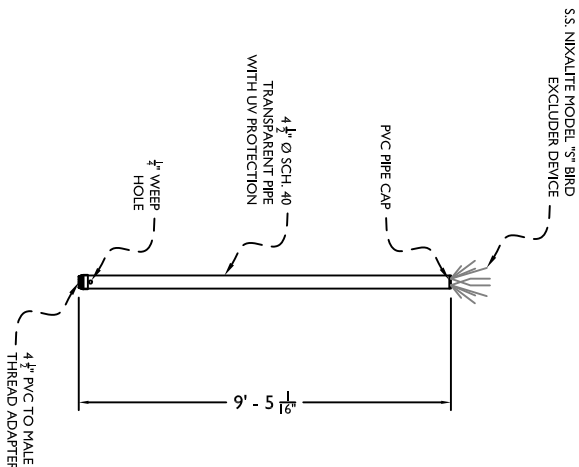
PART "TD-C"




PART "TD-D"



PART "TD-E"



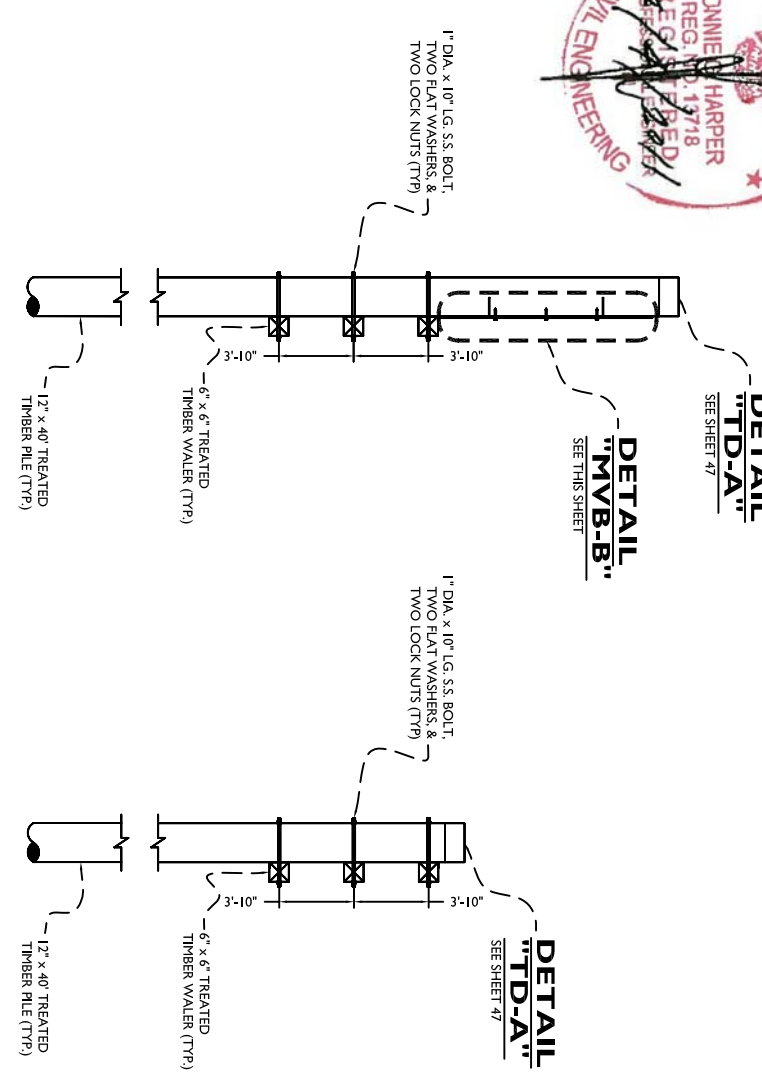
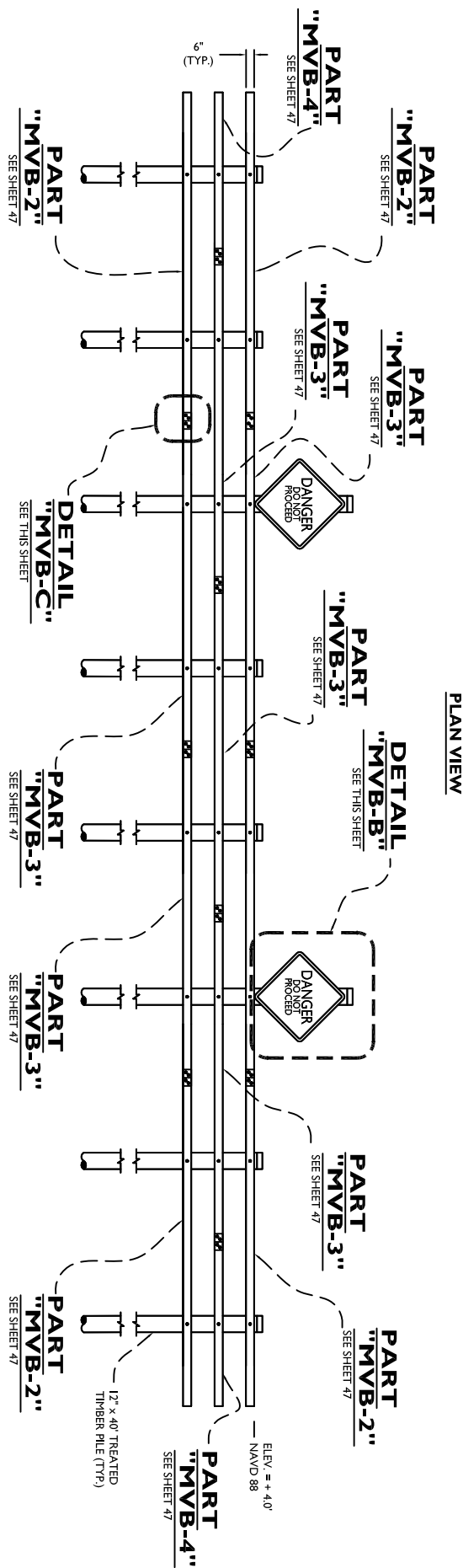
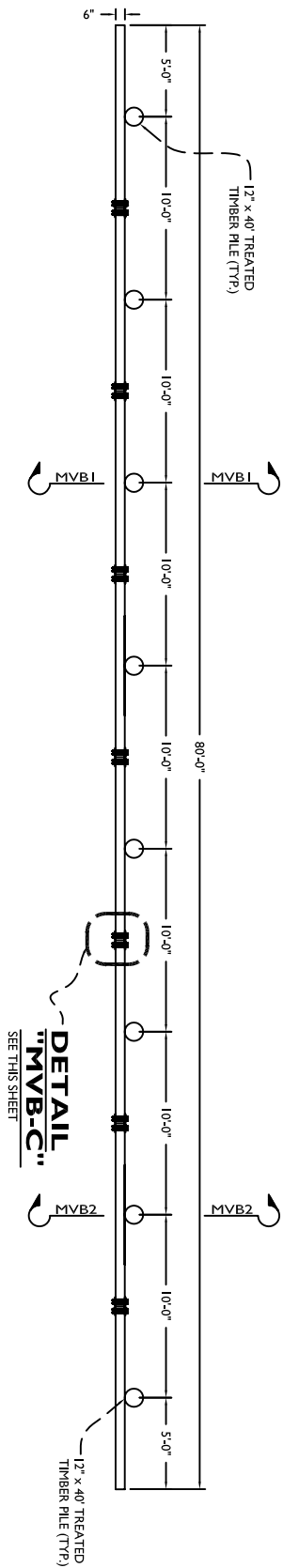
## AS-BUILT DRAWINGS

2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	CLW		
REV.	DATE	DESCRIPTION	BY		
<div><div><div><div>Lonnie G. Harper and Associates, Inc.</div><div>Civil Engineering and Land Surveying</div><div>2746 Hwy 384, Bldg C City, Louisiana 70630</div><div>Phone: (337) 905-1079 Fax: (337) 905-1076</div></div></div></div>					
DRAWN BY: AARON HARPER				DESIGNED BY: LONNIE HARPER	
OFFICE OF COASTAL PROTECTION AND RESTORATION				STATE OF LOUISIANA	
				450 LAUREL ST., SUITE 1501	
				BATON ROUGE, LOUISIANA 70801	
				MUD LAKE	TYPICAL DETAILS
				MAINTENANCE PROJECT	
				STATE PROJECT NUMBER: CS-20	
				FEDERAL PROJECT NUMBER:	DATE: 02/09/2009
				APPROVED BY: LONNIE HARPER	SHEET 44 OF 47



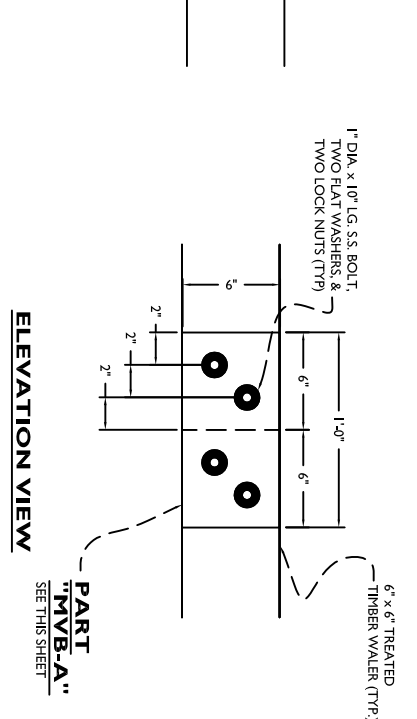
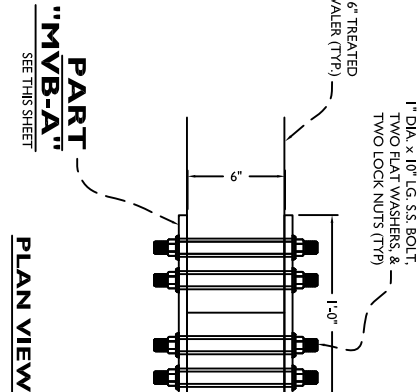
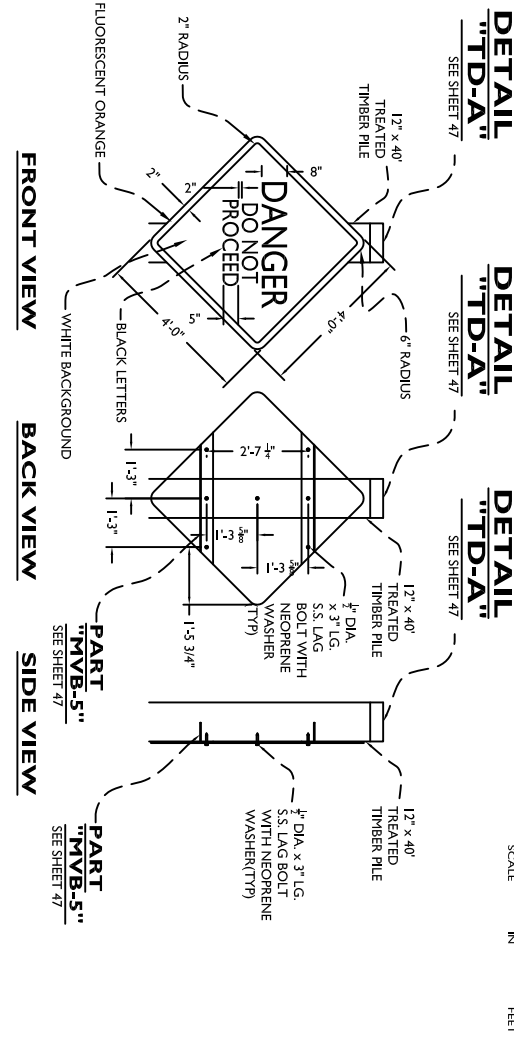


BASE BID

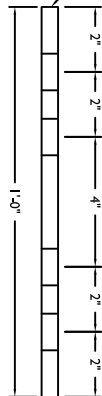
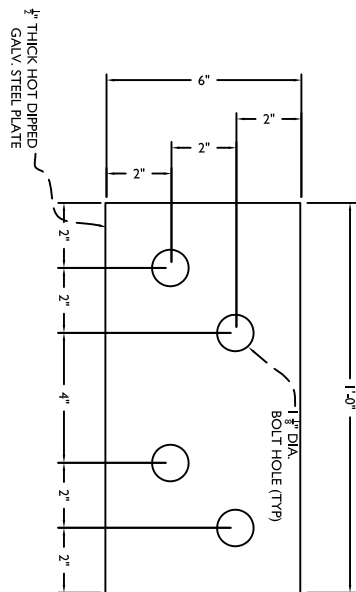
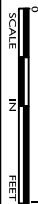


ELEVATION VIEW

DETAIL "MVB-A"



DETAIL "MVB-C"



SECTION "MVB2-MVB2"



SECTION "MVB1-MVB1"



AS-BUILT DRAWINGS

PART "MVB-1"

(QUANTITY = 20)



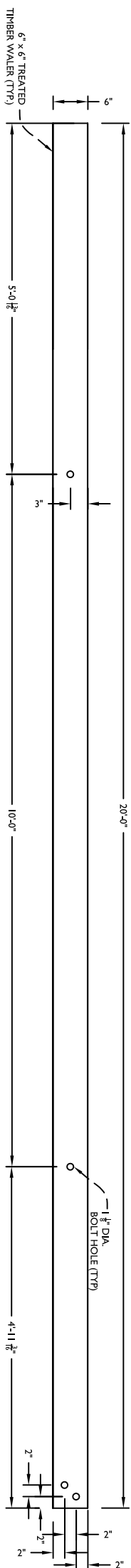
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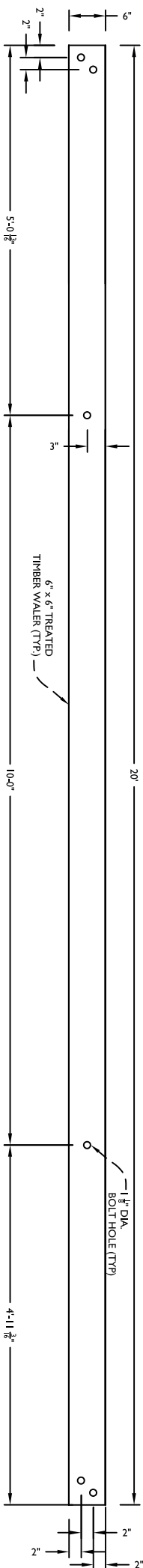
LONNIE G. HARPER  
and Associates, Inc.  
CIVIL ENGINEERING  
AND LAND SURVEYING  
2746 Hwy 384, Bldg City, Louisiana 70630  
PHONE: (337) 905-1079 FAX: (337) 905-1076



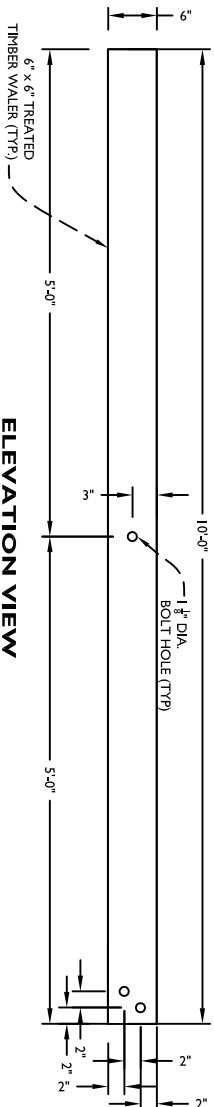
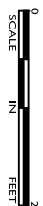
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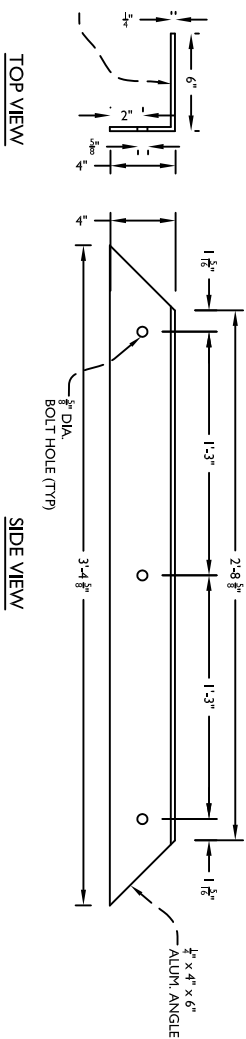
### ELEVATION VIEW



### ELEVATION VIEW



### ELEVATION VIEW



**NOTES:**

1. IF PILE DIAMETER EXCEEDS 13" CONTRACTOR WILL BE RESPONSIBLE FOR RESIZING THE METAL ROUND PILE COVER ACCORDINGLY. ALL PILE COVERS MUST OVERLAP THE TOP OF THE PILE A MINIMUM OF 3 1/2".

2. THE SAVED SURFACE OF PILING SHALL BE THOROUGHLY BRUSH COATED WITH KARNAK NO. 83 FIBRATED DAMPROOFING. THEN PLACE 2 LAYERS OF HEAVY CANVASS (14 OZ. MIN. PER SQ. YD.) 14"x14" SATURATED W/KARNAK NO. 83 FIBRATED DAMPROOFING, FOLLOWED BY  $\frac{1}{4}$ " ALUMINUM PLATE AS SHOWN. PLACE ALUMINUM CAP OVER PILE, AND ATTACH W/  $\frac{1}{2}$ "  $\varnothing$  x 14" S.S. BOLTS.

3. THE 1/2" BOLTS SHOULD BE DRILLED ALLOWING THEM TO GO THROUGH THE PILE LEAVING A MINIMUM OF 1/2" FROM THE TOP OF THE PILE.

2	04/04/11	REVISED ACCORDING TO AS-BUILT CONDITIONS	CLW
REV.	DATE	DESCRIPTION	BY

**PART "MVB-5"**



**LR**  
**LONNIE G. HARPER**  
and Associates, Inc.  
CIVIL ENGINEERING  
AND LAND SURVEYING  
70630  
2746 Hwy 384, Bel City, Louisiana  
PHONE: (337) 905-1079 FAX: (337) 905-1076

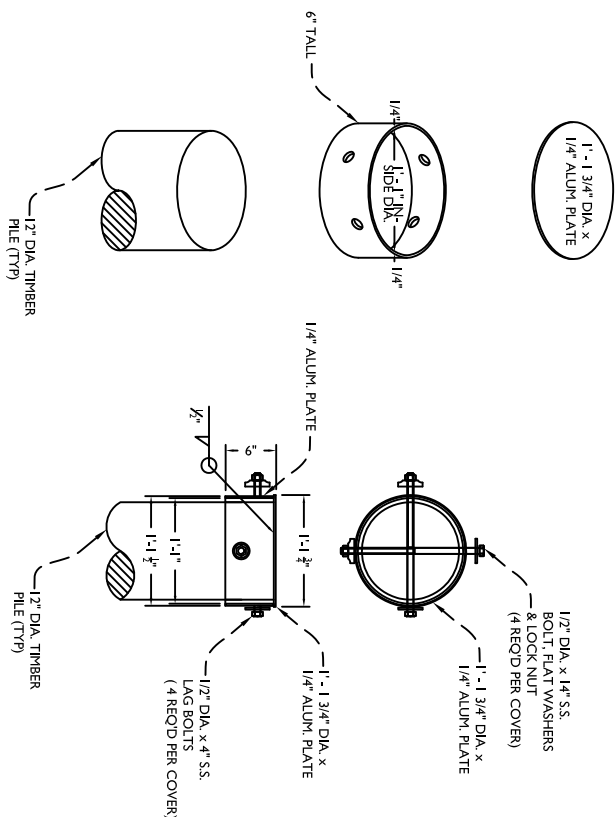
STATE OF LOUISIANA  
OFFICE OF COASTAL PROTECTION  
AND RESTORATION  
450 LAUREL ST., SUITE 1501  
BATON ROUGE, LOUISIANA 70801

---

DRAWN BY: AARON HARPER

DESIGNED BY: LONNIE HARPER
----------------------------

## PART "MVB-6"



# AS-BUILT DRAWINGS

MUD LAKE MAINTENANCE PROJECT		TYPICAL DETAILS
STATE PROJECT NUMBER:	CS-20	
FEDERAL PROJECT NUMBER:		
APPROVED BY: LONNIE HARPER	DATE: 02/09/2009	SHEET 47 OF 47